system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> {a)} a detecting means for detecting whether {an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user} a user-associated medium at least approaches {or comes in contact with a whole of or} at least a part of a housing of {the} said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car due to running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723** **Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

***724**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines" (claim 59) See also 1:66–2:10, 13A, and 13B; 6:7–22; 15:28–35

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

***725**

'893 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1)

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"the amount of instability caused by vertical and/or horizontal movement of the electric camera"	Indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television set/set" (3:22–23) or other screen compatible with NTSC or PAL format (1:33–36; 10:39–51)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

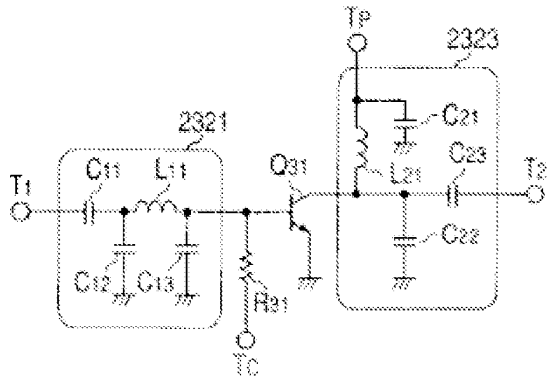
28. "variable amplitude amplifier" ('193 **Patent claims 1 and 7**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"Hardware, software, or a combination of the two that sometimes powers and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** At least one processor, such as a CPU, programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1, S9), Fig. 5 (including steps S3, S3-1) and corresponding citations in the specification at 3:66–4:4, 6:30–7:54, 9:15–18, 9:28–48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read-only memory to said second memory, as reference, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" **Structure:** claim 1: "a processor (FIG 1) connected via a bus between a read-only memory and the first memory, running the algorithm of Figs. 4 and 5, (at 9:1–7:54)

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
>
> z

Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	Indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 Patent claims 1 and 4)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: an external CPU (FIG. 3) connected via a bus between a read only memory and the memory, running the algorithm of Figs. 4 and 5. (6:30–7:54)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

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Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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Only the Westlaw citation is currently available.

HUAWEI DEVICE CO., LTD., Petitioner,

v.

MAXELL, LTD., Patent Owner.

Patent Trial and Appeal Board.
Case IPR2018-00251
Patent 7,203,517 B2
Entered: July 2, 2018

Attorneys and Law Firms

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Before LYNNE E. PETTIGREW, MINN CHUNG, and TERRENCE W. McMILLIN, Administrative Patent Judges.

DECISION

Granting Institution of *Inter Partes* Review

35 U.S.C. § 314(a)

CHUNG, Administrative Patent Judge.

I. INTRODUCTION

***1** Huawei Device Co., Ltd. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 1–5, 9, and 10 (the "challenged claims") of U.S. Patent No. 7,203,517 B2 (Ex. 1001, "the '517 patent"). Maxell, Ltd. ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp.").

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition ... and any response ... shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.4. On April 24, 2018, the Supreme Court held that a final written decision under 35 U.S.C. § 318(a) must decide the patentability of all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). Taking into account the arguments presented in Patent Owner's Preliminary Response, we determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one challenged claim. Accordingly, we institute an *inter partes* review of all challenged claims (1–5, 9, and 10) of the '517 patent, based on all grounds raised in the Petition.

II. BACKGROUND

A. Real Parties-in-Interest and Related Matters

Petitioner identifies Huawei Technologies Co., Ltd., Huawei Device USA, Inc., Huawei Investment & Holding Co., Ltd., Huawei Device (Dongguan) Co., Ltd., Huawei Tech. Investment Co., Ltd., and Huawei Device (Hong Kong) Co., Ltd., as additional real parties-in-interest for Petitioner. Pet. 3–4.

The parties indicate that the '517 patent is the subject of the following district court litigation: *Maxell, Ltd. v. Huawei Device USA Inc.*, Case No. 5:16-cv-00178-RWS (E.D. Tex.). *Id.* at 4; Paper 4, 1.

B. The '517 Patent

The '517 patent generally relates to communication control for mobile communication devices having multiple communication interfaces. Ex. 1001, 1:6–9. As background, the '517 patent describes that, conventionally, a communication control in the mobile communication for switching among a plurality of communication interfaces in a mobile communication terminal device selects an optimal communication interface based on the communication conditions of the communication interfaces. *Id.* at 1:10–16.

In the section entitled "SUMMARY OF THE INVENTION," the '517 patent describes the disadvantages of the conventional approach and contrasts and differentiates the disclosed methods from the conventional methods. *Id.* at 1:27–2:16. According to the '517 patent, in the conventional methods, when a mobile device with multiple communication interfaces moves around, the rank of preference for the available interfaces may change, resulting in frequent switching among the interfaces. *Id.* at 1:27–34. Thus, a disadvantage of the conventional methods is the lack of stability in the communication connections, especially when

the mobile device moves at a high speed. *Id.* at 1:34–36. For example, if the mobile device goes in and out of a number of different areas of different communication availabilities, the conventional automatic selection method may make a large number of obligatory switches to interfaces with a better communication condition or situation, even if a user wants to maintain connection with a particular interface. *Id.* at 1:37–41, 1:51–55.

***2** The '517 purports to avoid such frequent switching when the mobile device is moving at a high speed by selecting an interface which provides a connection over a wider range and *not* necessarily switching to another interface that presents a better communication condition or situation. *Id.* at 2:7–12. Figure 3B of the '517 patent is reproduced below.

FIG.3B

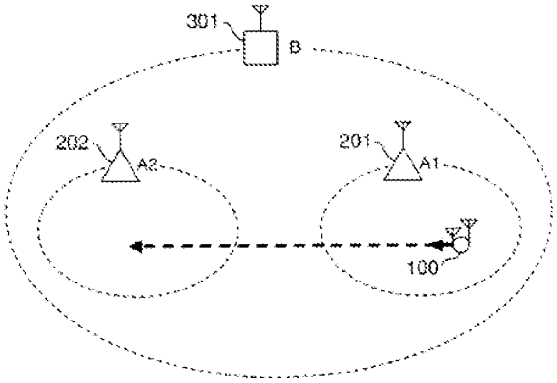


Figure 3B illustrates a communication environment when a mobile device moves through areas of two or more different available communication connections. *Id.* at 4:51–58. As shown in Figure 3B, the mobile device moves from area A1 to area A2 in which wireless LAN communications are available through access points 201 and 202, respectively. *Id.* at 4:17–19, 4:52–58. At the same time, cellular communications through base station 301 are available in a larger area B. *Id.* at 4:19–22.

The '517 patent describes that, in a situation depicted in Figure 3B, the conventional selection method connects to access point 201 via the wireless LAN interface while the mobile device is within area A1 and, when the mobile device moves out of area A1 and out of the range of the wireless LAN communication, switches the connection to the cellular communication connection with base station 301 available in area B. *Id.* at 4:61–5:1. When the mobile device moves into area A2, the conventional method again switches to wireless LAN communications available via access point 202. *Id.* at 5:1–3.

To avoid such frequent switching, according to the '517 patent, the cellular telephone communication is given a higher priority when the mobile device is moving to maintain the communication connection over a wider range and to *not* switch to a wireless LAN connection, even if the telephone connection presents a worse communication condition than the wireless LAN connection. *Id.* at 5:3–14. Thus, in the switching method of the '517 patent, the switching is controlled based on the moving speed of the mobile device, as well as the position of the device. *Id.* at 5:8–14.

When the mobile device is at rest or moving at a low speed, the '517 patent describes that an inexpensive interface, such as a wireless LAN or a PHS (Personal Handy-Phone System) is selected. *Id.* at 2:12–16, 7:9–26. According to the '517 patent, the PHS connection may provide a cost-effective option compared to the cellular telephone communications when the mobile device is moving but not at a high speed and not over a long distance. *Id.* at 7:16–27. The rest-state priorities, low-speed moving state priorities, and high-speed priorities are illustrated in Figure 6(b) (not reproduced herein).

C. Illustrative Claims

Of the challenged claims, claims 1 and 9 are independent. Claim 9 is illustrative of the challenged claims and is reproduced below.

> 9. A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface, said mobile communication terminal device comprising:
>
> a communication determination unit for determining whether or not each of said first and second physical interfaces is available for a communication;
>
> ***3** a movement determination unit for determining a moving speed of said mobile communication terminal device;
>
> a position detection unit for detecting a position of said mobile communication terminal device,
>
> wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said

movement determination unit, and the position detected by said position detection unit; and

a priority setting unit for setting a priority of said selection switching determination of said first or second physical interface in said selection switching determination unit.

Ex. 1001, 12:28–50.

D. Asserted Prior Art and Grounds of Unpatentability

Petitioner cites the following references in its challenges to patentability.

Reference and Relevant Date(s)	Designation	Exhibit No.
Japanese Patent Application Publication No. 2001-309445 (published Nov. 2, 2001)	Mukai	Ex. 1004[1]
International Patent Application Publication No. WO 01/99462 Al (published Dec. 27, 2001)	Takano	Exs. 1014, 1017[2,3]
U.S. Patent No. 5,903,832 (issued May 11, 1999)	Seppanen	Ex. 1006

Petitioner also relies on the Declaration of Dr. Jonathan Wells (Ex. 1007).

Petitioner asserts the following grounds of unpatentability.

Claim(s) Challenged	Statutory Basis	Reference(s)
1–5	§ 103(a)	Mukai and Takano
9 and 10	§ 103(a)	Mukai
3 and 4	§ 103(a)	Mukai, Takano, and Seppanen
10	§ 103(a)	Mukai and Seppanen

Pet. 6.

III. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard in *inter partes* reviews). Under the broadest reasonable interpretation standard, and absent any special definitions, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art, in view of the specification. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). A particular embodiment appearing in the written description generally is not incorporated into a claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

***4** The parties do not dispute construction of any term of the challenged claims at this time. *See* Pet. 15–23; Prelim. Resp. 7–10. For example, the parties agree that the preambles of claims 1 and 9 are limiting and that "a selection switching determination unit" recited in the preambles should be interpreted as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6.[4] Pet. 15–16, 18–23; Prelim. Resp. 7–9. In addition, the parties agree that, for both claims 1 and 9, the term "selection switching determination unit" should be interpreted to cover the following corresponding structure:

> Physical interface selection unit 104, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistan[t]), a car navigation that perform[s] processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example,

Figs. 4, 6, 9, and 10 and corresponding recitations in the specification as provided herein, or equivalents thereof.

Pet. 19–20, 22–23; Prelim. Resp. 8–9. Petitioner also identifies the claimed function recited in claim 1 as follows:

selecting one from said first and second physical interfaces to switch to a selected physical interface ... wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit ... wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

Pet. 19. For claim 9, Petitioner identifies the recited function as follows:

selecting one from said first and second physical interfaces to switch to a selected physical interface ... wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit.

Id. at 22. Patent Owner does not dispute the recited functions for "selection switching determination unit" identified by Petitioner. *See* Prelim. Resp. 8–9.

Based on the current record, we are persuaded that the parties' agreed constructions are sufficiently supported by the intrinsic record as cited by the parties. *See* Pet. 19–20 (citing Ex. 1001, 3:33–39, 5:25–50, 5:65–6:44, 7:32–67, 8:52–9:5, 9:28–10:9, 3:5–10); Prelim. Resp. 9 (citing the same). For purposes of this Decision, we adopt the parties' constructions of the term "selection switching determination unit" as summarized above.

On this record and for purposes of this Decision, we do not find it necessary to make formal claim constructions for any claim terms other than the term "selection switching determination unit" discussed above. *See, e.g.*, *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.' " (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Obviousness Over Mukai Alone or Mukai Combined with Takano

***5** Petitioner contends claims 1–5 are unpatentable as obvious under 35 U.S.C. § 103(a) over the combined teachings of Mukai and Takano. Pet. 30–58. Petitioner also contends that claims 9 and 10 are unpatentable as obvious over Mukai alone. *Id.* at 58–62.

1. Relevant Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art;[5] and (4) where in evidence, so-called secondary considerations.[6] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze these asserted grounds based on obviousness with the principles identified above in mind.

2. Overview of Mukai (Ex. 1004)

Mukai describes an automatic network switchover system in a terminal device that automatically switches network connections on the basis of the position information and the movement speed information of the terminal device, as well as the connection information stored in a database, so that the most suitable network connection is automatically selected regardless of whether the terminal device is moving or at rest. Ex. 1004 ¶ 5, Abstract.

Figure 1 of Mukai is reproduced below.

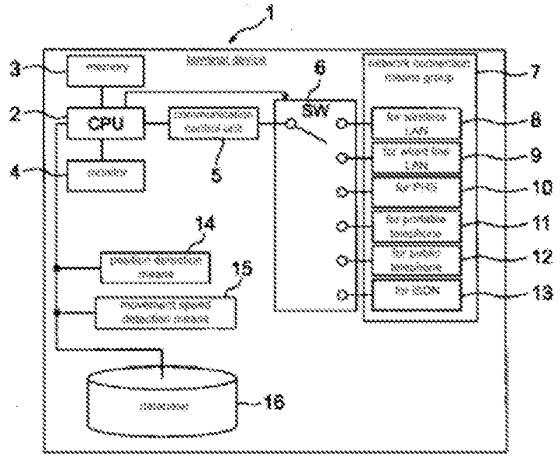


Figure 1 is a block diagram of an exemplary automatic network switchover system of Mukai. As shown in Figure 1, terminal device 1 includes CPU 2, communication control unit 5, switchover switch unit 6, wireless LAN connection unit 8, PHS modem unit 10, portable telephone unit 11, position detection means 14 that detects the current position of terminal device 1, movement speed detection means 15 that detects the current movement speed of terminal device 1, and database 16 that stores connection information. Ex. 1004 ¶ 8. Mukai describes that the terminal device automatically makes a connection to a network when network disconnection is detected or when the signal transmission quality with the network has degraded. *Id.* ¶ 11. Figure 2 of Mukai is reproduced below.

[FIG. 2]

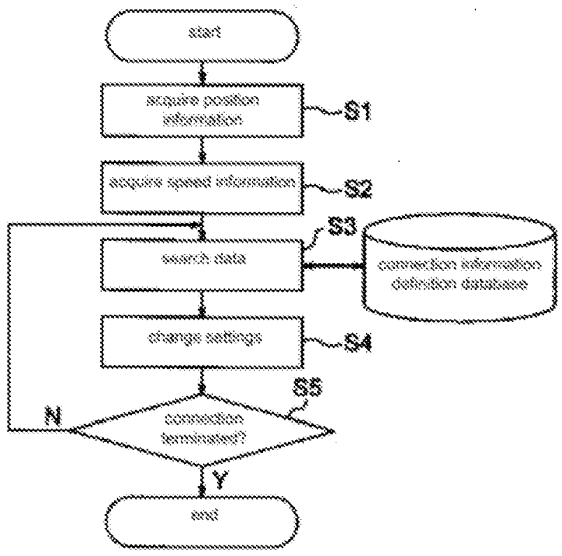


Figure 2 is a flow chart illustrating the process of making a network connection described in Mukai. *Id.* ¶¶ 11–12.

***6** As described in Figure 2, the terminal device of Mukai first acquires its current position and moving speed information from position detection means 14 and movement speed detection means 15. *Id.* ¶ 12, Fig. 2 (steps S1, S2). Next, information necessary for network connection is obtained by searching the content of database 16 using the position information and the speed information. *Id.* ¶ 12, Fig. 2 (step S3). Then, the network connection unit corresponding to the acquired connection information is selected, and the connection is made to the selected network. *Id.* ¶ 12, Fig. 2 (step S4).

Figure 3 of Mukai is reproduced below.

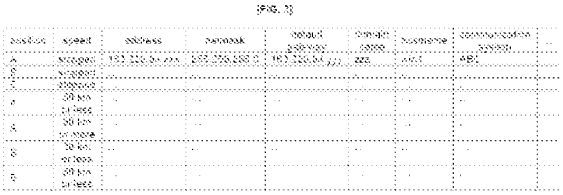


Figure 3 shows an example of connection information stored in database 16. *Id.* ¶ 13. As shown in Figure 3, database 16 contains information regarding available network connections at the listed locations and moving speeds, such as the IP address, the address of the default gateway, and the network domain name. *Id.*

Mukai describes that the database can include connection priority ranking information. *Id.* ¶ 14. According to Mukai, when multiple connections are available at the same location and speed, the network connection with the highest priority ranking is selected for communication. *Id.* For example, when the terminal device is at rest, e.g., at a home or an office, the priority ranking for a wireless LAN connection is set high so that the wireless LAN connection is selected among the available network connections. *Id.* ¶ 15. In addition, when the terminal device is traveling at a low speed, a PHS connection is selected by setting the priority ranking for the PHS connection higher than the portable telephone connection (i.e., cellular communication connection) "in consideration of ... economy." *Id.*

3. Overview of Takano (Ex. 1017)

Takano describes a mobile communication control method in a cellular communications system. Ex. 1017, Abstract. According to Takano, a reception monitor in a mobile station periodically measures pilot signals from base stations.

Id. Takano describes that the mobile station measures the reception quality of each of the pilot signals from a plurality of base stations to determine which base stations to use for transmissions. *Id.* at 6:41–47.

According to Takano, if the mobile station is moving at a high speed, there may be a large difference in the reception quality at the time of actual transmission with the base station from the time of the pilot signal measurement. *Id.* at 12:29–34. Thus, Takano increases the length of time for the pilot signal reception quality measurement as the movement speed of the mobile station increases. *Id.* at 12:51–13:10.

4. Independent Claims 1 and 9

Petitioner acknowledges that the limitations of claims 1 and 9 are identical except for the last limitations of the claims. Pet. 59–60. Patent Owner does not dispute Petitioner's characterization of the similarities between claims 1 and 9. Prelim. Resp. 21–22. In what follows, we discuss the identical or common limitations of claims 1 and 9 first and then address the remaining limitations and the claims as a whole.

a. Common Limitations

Petitioner contends that Mukai teaches or suggests each of the common limitations of claims 1 and 9. Pet. 31–40, 59–60. For the reasons explained below, we agree with Petitioner's arguments and evidence.

(i) Preambles

Petitioner asserts that Mukai teaches or suggests the preambles of claims 1 and 9. *Id.* at 31–36, 59. Referencing Figure 1 of Mukai and related disclosure, Petitioner asserts that each of network connection means 8–13 depicted in Figure 1 of Mukai may correspond to the "first physical interface" and the "second physical interface different in scheme from said first physical interface" recited in the claims. *Id.* at 32 (citing Ex. 1004 ¶¶ 8, 14, 15, Fig. 1).

***7** Petitioner further contends that Mukai teaches a "selection switching determination unit" recited in claims 1 and 9 under the construction of the term discussed above in Section III.A (Claim Construction), which we adopt for purposes of this Decision. *Id.* at 33–36 (citing Ex. 1004 ¶¶ 6, 8, 11, Figs. 1, 2). We have reviewed Petitioner's argument and evidence and are persuaded that Petitioner has made a sufficient showing that Mukai discloses the recited function and the corresponding structure.

Patent Owner does not dispute Mukai teaches the preambles of claims 1 and 9. Based on the record presented, we are persuaded that Petitioner has demonstrated sufficiently Mukai teaches or suggests the preambles of claims 1 and 9.

(ii) "communication determination unit"

Petitioner identifies as limitation [1a] or [9a] the limitation reciting "a communication determination unit for determining whether or not each of said first and second physical interfaces is available for a communication." Pet. 36, 59. The parties' dispute with respect to this limitation centers on whether Mukai teaches determining whether each physical interface is "available" for communication.

Petitioner asserts that Mukai teaches determining whether interfaces are available for communication because Mukai detects a "network disconnection" or if "signal transmission quality with the network has degraded." *Id.* at 36 (citing Ex. 1004 ¶ 11). Petitioner further relies on Mukai's disclosure of "search[ing] for a *connectable* communication system" and attempting to "connect to the network" "if there are multiple *connectable* network means." *Id.* at 36–37 (emphases added) (citing Ex. 1004 ¶ 13). Citing the testimony of Dr. Wells, Petitioner argues that determining whether a network means is "connectable" requires determining whether it is "available" for a communication. *Id.* at 37 (citing Ex. 1007 ¶¶ 72–73).

Patent Owner asserts that Mukai does not disclose the claimed "communication determination unit" because monitoring "signal transmission quality" to determine whether it has degraded is not the same as monitoring the availability of an interface. Prelim. Resp. 14. Patent Owner argues that the Specification of the '517 patent shows that "the communication 'ranges' of the access points determine the availability of the respective physical interfaces." *Id.* at 13 (citing Ex. 1001, 4:17–27, Figs. 3A, 3B). In particular, Patent Owner argues that Figures 3A and 3B of the '517 patent show that communication availability is a function of signal range. *Id.* at 12–13. Patent Owner further argues that, because communication ranges are a function of signal strength, communication availability connotes a threshold that a signal must meet or exceed to qualify as "available." *Id.* at 11, 13.

We do not agree with Patent Owner's argument because Figures 3A and 3B of the '517 patent on which Patent Owner relies describe an embodiment where the mobile device is moving at a high speed. As discussed above in Section II.B, the '517 patent also describes alternative embodiments where

the mobile device is at rest or moving at low speeds. Ex. 1001, 2:12–16, 7:10–42. Hence, we do not agree that the meaning of communication availability is as limited as Patent Owner contends.

For purposes of this Decision, we are persuaded by Petitioner's arguments and evidence that ascertaining "connectable" networks described in Mukai teaches determining whether interfaces are available for communication.

Based on the record presented, we are persuaded that Petitioner has demonstrated sufficiently that Mukai teaches or suggests "a communication determination unit for determining whether or not each of said first and second physical interfaces is available for a communication," as recited in claims 1 and 9.

(iii) "movement determination unit" and "position detection unit"

***8** Petitioner contends that Mukai's movement speed detection means 15 and position detection means 14 teach the "movement determination unit" and "position detection unit" recited in the claims, respectively. Pet. 37–38 (citing Ex. 1004 ¶¶ 8, 9, 10). Patent Owner does not dispute Mukai teaches these limitations.

Based on the record presented, we are persuaded that Petitioner has demonstrated sufficiently that Mukai teaches or suggests "a movement determination unit for determining a moving speed of said mobile communication terminal device," and "a position detection unit for detecting a position of said mobile communication terminal device," as recited in claims 1 and 9.

(iv) "wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

Petitioner identifies as limitation [1d] or [9d] the limitation of claims 1 and 9 reciting "wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit." Pet. 38, 59–60. Similar to limitation [1a] or [9a] discussed above, the parties' dispute with respect to this limitation centers on whether Mukai teaches "selection switching based on the communication availability" determined by said communication determination unit.

Similar to limitation [1a] or [9a] discussed above, Petitioner asserts that Mukai's disclosure of searching the content of the database to identify potential interfaces and to determine if an interface is "connectable" teaches determining "communication availability" by the communication determination unit. *Id.* at 39–40 (citing Ex. 1004 ¶¶ 12–13). Thus, Petitioner argues Mukai's selecting and switching to the connectable interface teaches "mak[ing] a selection switching based on the communication availability determined by said communication determination unit," as recited in the claims. *Id.* at 40 (citing Ex. 1004 ¶ 12; Ex. 1007 ¶ 76).

Patent Owner asserts that Mukai's switching process is based solely on position and speed, *not* communication availability. Prelim. Resp. 17. Patent Owner argues that Mukai's switching process searches the content of database 16 on the basis of the position and the speed information of the terminal device and selects a network based on the corresponding position and speed information. *Id.* at 17–18 (citing Ex. 1004 ¶ 12, Fig. 2). Patent Owner contends that the communication availability of candidate networks is neither determined nor incorporated in Mukai's switching process. *Id.* at 18.

Patent Owner, however, does not address Mukai's disclosure of acquiring from the database "information (parameters) necessary for connection," such as the IP address, the default gateway, domain name, and communication system information, for the "connectable" communication system available at the position and speed of the terminal device. Ex. 1004 ¶¶ 12, 13, Figs. 2, 3; Pet. 38–39 (citing Ex. 1004 ¶¶ 12, 13). Thus, we do not agree with Patent Owner's argument that Mukai's switching process is based solely on position and speed.

***9** Based on the record presented, we are persuaded that Petitioner has demonstrated sufficiently that Mukai teaches or suggests "wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit," as recited in claims 1 and 9.

b. Claim 9

The last limitation of claim 9, which Petitioner identifies as limitation [9e], recites "a priority setting unit for setting a priority of said selection switching determination of said first or second physical interface in said selection switching determination unit."

Petitioner relies on the at-rest and low speed embodiments of Mukai to teach this limitation. Pet. 60–61. Referencing Figure 4 of Mukai, Petitioner asserts that Mukai discloses a database including "priority rankings," which is used to set priorities of the connectable communication systems. *Id.* at 60 (citing Ex. 1004 ¶ 14, Fig. 4). Petitioner argues that Mukai discloses "setting a priority of said selection switching determination of said first or second physical interface," as recited in claim 9, because Mukai discloses ranking the available physical interfaces with the "priority ranking" field. *Id.* at 60–61 (citing Ex. 1004 ¶ 14). Petitioner further argues that the priority ranking is the priority of the available physical interfaces that are selected by the selection switching determination unit. *Id.* at 61 (citing Ex. 1004 ¶¶ 14, 15, 16).

Patent Owner does not dispute Mukai teaches limitation [9e] of claim 9. Prelim. Resp. 21–22. Based on the record presented, we are persuaded that Petitioner has shown sufficiently that Mukai teaches limitation [9e].

As discussed above, paragraph 15 of Mukai discloses that, when the terminal device is at rest, e.g., at a home or an office, the priority ranking for a wireless LAN connection is set high so that the wireless LAN connection is selected among the available network connections. Ex. 1004 ¶ 15. In addition, when the terminal device is traveling at a low speed, a PHS connection is selected by setting the priority ranking for the PHS connection higher than the portable telephone connection (i.e., cellular communication connection) "in consideration of ... economy." *Id.* Petitioner relies on these at-rest and low-speed embodiments of Mukai to teach not only limitation [9e] but also limitation [9d]. With respect to limitation [9d], Petitioner argues that Mukai teaches using priority rankings to "select and switch" to a physical interface because Mukai discloses "if there are multiple connectable network means, the connection to the network ... is performed using the network connection means with the highest connection priority ranking." Pet. 61 (citing Ex. 1004 ¶ 14).

We note that the subject matter disclosed in Mukai's at-rest and low-speed embodiments appears to be highly similar to the subject matter described in the at-rest and low-speed embodiments of the '517 patent. *Compare* Ex. 1001, 2:12–16, 7:9–67, Fig. 6(b), *with* Ex. 1004 ¶¶ 14, 15, Fig. 4. Importantly, in both the '517 patent and Mukai, the priority rankings depend on the position and the speed of the mobile terminal. As discussed above, in Mukai, the position and the speed of the terminal device are also used to determine the available network connections at the location and the speed of the terminal device. Thus, we agree with Petitioner that the at-rest and low-speed embodiments of Mukai teach or suggest making "a selection switching based on the communication availability," "the moving speed," and "the position," as recited in claim 9. Pet. 61 (citing Ex. 1004 ¶ 14). Therefore, on the record currently before us, we are persuaded by Petitioner's arguments and evidence that Mukai's at-rest and low-speed embodiments render the subject matter of claim 9 obvious.

***10** Accordingly, based on the record presented, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claim 9 under 35 U.S.C. § 103(a) as obvious over Mukai.

c. Claim 1

The last limitation of claim 1, which Petitioner identifies as limitation [1e], recites "wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster." Petitioner contends that the combination of Mukai and Takano renders this limitation obvious. Pet. 40. Patent Owner's argument against the proposed combination focuses on the rationale to combine the references. Prelim. Resp. 20–21.

As discussed above in Section II.B, the '517 patent describes the disadvantages of the conventional approach and contrasts and differentiates the disclosed methods from the conventional methods. Ex. 1001, 1:27–2:16, 4:64–5:14. According to the '517 patent, the conventional method automatically switches to the connection with a better communication condition, which may cause frequent switching when the mobile device is moving at a high-speed. *Id.* at 1:27–55, 4:61–5:3. In the switching method of the '517 patent, to avoid such frequent switching when the mobile device is moving, a connection providing communication over a wider range is given a higher priority to maintain the communication connection over a wider range, even

if the maintained connection has a worse communication condition. *Id.* at 2:7–12, 5:3–14. In other words, in the moving embodiment of the '517 patent, when a connection with a wider range is available, the switching method does *not* make the switch to another interface that presents a better communication condition or situation. *Id.*

In view of the clear and unequivocal disclaimer and the disparagement of the conventional switching methods found in the Specification, it appears likely that the subject matter of the conventional switching method is excluded from the scope of the claims of the '517 patent. *See In re Abbott Diabetes Care Inc.*, 696 F.3d 1142, 1149 (Fed. Cir. 2012) (the claim term "electrochemical sensor" excluded cables and wires in view of claim language and disparaging remarks in the specification with respect to the external cables and wires of the prior-art sensors).

As discussed above, Petitioner concedes that Mukai's determination of communication availability ascertains available networks at the position and the speed of the mobile terminal. Pet. 36–37, 39–40. This appears to be part of a conventional method as described in the '517 patent. *See* Ex. 1001, 1:27–32 ("In the conventional methods, when a mobile communication terminal having a plurality of different communication interfaces moves in environments in which the respective interfaces are available, it is expected that the interfaces change place in the rank for their availability and favorableness for communication from time to time in the movement."). Further, Mukai describes that Mukai's switching method selects and connects to the "most suitable" network means. Ex. 1004 ¶¶ 4, 5, 21. Thus, it is possible that the moving (or fast-moving) embodiment of Mukai falls within the subject matter of the conventional switching methods excluded from the scope of the '517 patent claims.

***11** Petitioner's discussion of limitation [1e] of claim 1 seems to indicate that Petitioner relies on the moving (or fast-moving) embodiment of Mukai in its unpatentability challenge to claim 1. *See, e.g.*, Pet. 43 ("It would have been obvious to a [person of ordinary skill in the art] to have Mukai's switching decisions take longer when the device is *moving*." (emphasis added)), 44 ("A [person of ordinary skill in the art] would also have had reason to implement Mukai's evaluation formula in a manner that took a longer period of time to switch interfaces when the mobile device was *moving faster*." (emphasis added)).

Because Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '517 patent is unpatentable, we will institute on all grounds and all claims raised in the Petition. Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every claim challenged in the Petition. Nevertheless, because a trial is being instituted, we encourage the parties to address in their papers the issue of whether conventional switching methods are excluded from the scope of the '517 patent claims (e.g., from the scope of the term "mak[ing] a selection switching based on the communication availability"), whether Mukai's moving (or fast-moving) embodiment falls within the excluded subject matter, and, if so, whether Mukai's moving embodiment can be relied upon to render claim 1 of the '517 patent unpatentable.

5. Dependent Claims 2–5 and 10

Claim 10 depends from claim 9 and further recites "an output unit for notifying a user of the communication availability determined by said communication determination unit."

Petitioner contends that Mukai teaches, suggests, or renders obvious the additionally recited limitation of claim 10 because Mukai uses a "monitor" (i.e., an output unit) for "display[ing] various information." Pet. 52–53 (citing Ex. 1004 ¶ 8, Fig. 1). Citing the testimony of Dr. Wells, Petitioner asserts that a person of ordinary skill in the art would have had reasons to use the monitor of Mukai to include an indication of available interfaces because doing so would have provided various benefits to the user and Mukai already uses the monitor to display various information. *Id.* at 54 (citing Ex. 1004 ¶¶ 5, 8, 19, 21, Fig. 1; Ex. 1007 ¶¶ 94–95).

Patent Owner argues that a person of ordinary skill in the art would not have modified the teachings of Mukai as proposed by Petitioner because Mukai teaches away from the additionally recited limitation of claim 10 in view of Mukai's emphasis on automated switchover and convenience for users. Prelim. Resp. 22–23.

At this preliminary stage, we are not persuaded that providing an indication of available interfaces on Mukai's monitor is necessarily inconsistent with Mukai's description of automated switchover and convenience for users. Further, a reference does not teach away "if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed." *Polaris Indus., Inc. v. Arctic Cat,*

Inc., 882 F.3d 1056, 1069 (Fed. Cir. 2018) (internal quotation marks omitted) (citation omitted).

Based on the current record, we are persuaded Petitioner has demonstrated a reasonable likelihood that it would prevail on its assertion that claim 10 is unpatentable under 35 U.S.C. § 103(a) as obvious over the teachings of Mukai.

Claims 2–5 each depend directly or indirectly from claim 1. Petitioner contends that claims 2–5 are unpatentable as obvious over the combination of Mukai and Takano. Pet. 30–31, 49–58. Because Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '517 patent is unpatentable, we will institute on all grounds and all claims raised in the Petition. Therefore, as discussed above with respect to claim 1, at this stage of the proceeding, it is not necessary for us to provide an assessment of every claim challenged in the Petition.

C. Remaining Obviousness Grounds

***12** In the remaining grounds of challenge to patentability, Petitioner asserts that claims 3 and 4 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Mukai, Takano, and Seppanen (Pet. 62–67) and claim 10 is unpatentable as obvious over the combination of Mukai and Seppanen (*id.* at 67–68).

As noted above, because Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '517 patent is unpatentable, we will institute on all grounds and all claims raised in the Petition. Therefore, at this stage of the proceedings, it is not necessary for us to provide an assessment of every ground asserted by Petitioner.

D. Declaration of Dr. Wells

Patent Owner generally argues, at the end of its Preliminary Response, that the Board should disregard Dr. Wells' testimony in his Declaration as failing "to provide any articulated reasoning with a rational underpinning necessary to support the conclusory statements regarding the claims of obviousness made in the Petition." Prelim. Resp. 25. We agree that merely conclusory statements of a declarant are not entitled to substantial weight, but we disagree with Patent Owner's characterization of Dr. Wells' testimony. Patent Owner also contends "Dr. Wells' statements in many instances parrot the conclusory statements in the Petition, and it is impossible to tell whether they are his own or are those of Petitioner's lawyers." *Id.* at 25–26. We, again, disagree. We further observe that an overlap in substance between a petitioner's arguments and the supporting testimony of a petitioner's declarant is to be expected; it is not necessarily, as Patent Owner seems to suggest, cause to deny the declarant's testimony probative weight. Nor do the Board decisions cited by Patent Owner stand for such a proposition. *See id.* at 26.

IV. CONCLUSION

For the foregoing reasons, taking into account the arguments presented in Patent Owner's Preliminary Response, we conclude that the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail in challenging at least one claim of the '517 patent as unpatentable under § 103(a). At this stage of the proceeding, we have not made a final determination as to the patentability of any of the challenged claims. Our final determination will be based on the record as fully developed during trial.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314, an *inter partes* review of all challenged claims (1–5, 9, and 10) of the '517 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, the trial commencing on the entry date of this Decision.

Footnotes

1 Exhibit 1004 is an English translation of the original Japanese Patent Application Publication No. 2001-309445 (Ex. 1003). Petitioner has filed with Exhibit 1004 an affidavit attesting to the accuracy of the translation, as required by 37 C.F.R. § 42.63(b). *See* Ex. 1004, 1 (Certificate of Accuracy). Patent Owner does not dispute the accuracy of the English translation in Exhibit 1004 at this time. Our citations to Mukai are to Exhibit 1004, the certified English translation.

2 Exhibit 1014 is an English translation of the original International Patent Application Publication No. WO 01/99462 Al (Ex. 1005). Petitioner has filed with Exhibit 1014 an affidavit attesting to the accuracy of the translation, as required by 37 C.F.R. § 42.63(b). *See* Ex. 1014, 1 (Certificate of Accuracy). Patent Owner does not dispute the accuracy of the English translation in Exhibit 1014 at this time. According to Petitioner, Exhibit 1017 is a version of the certified English translation with Petitioner's annotations to "include line numbers and to remove certain inconsistent page numbering." Pet. 27 n.7. Our citations to Takano are to Exhibit 1017, the certified English translation with Petitioner's annotations.

3 Exhibit 1017 is not accompanied by an affidavit attesting to the nature of the alleged annotations or the accuracy thereof. Although Exhibit 1017 does not appear to be properly authenticated, Patent Owner does not challenge the admissibility of Exhibit 1017 at this time.

4 Section 4(c) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), re-designated 35 U.S.C. § 112, ¶ 6, as 35 U.S.C. § 112(f). Because the '517 patent has a filing date prior to September 16, 2012, the effective date of § 4(c) of the AIA, we refer to the pre-AIA version of 35 U.S.C. § 112. *See* AIA § 4(e).

5 Petitioner offers an assessment as to the level of skill in the art at the time of the invention of the '517 patent. Pet. 6–7. Petitioner also asserts that the prior art of record reflects the level of skill in the art. *Id.* At this time, Patent Owner does not propose an alternative assessment. To the extent necessary, and for purposes of this Decision, we accept the assessment offered by Petitioner as it is consistent with the '517 patent and the asserted prior art.

6 Patent Owner does not present arguments or evidence of such secondary considerations in its Preliminary Response. Therefore, at this preliminary stage, secondary considerations do not constitute part of our analysis.

End of Document

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2019 WL 1503084 (Patent Tr. & App. Bd.)
Only the Westlaw citation is currently available.

HUAWEI DEVICE CO., LTD., Petitioner,

v.

MAXELL, LTD., Patent Owner.

Patent Trial and Appeal Board.
Case IPR2018-00251
Patent 7,203,517 B2
Entered: April 3, 2019

Attorneys and Law Firms

PETITIONER: David Garr, Greg Discher, Anupam Sharma, Peter Chen, dgarr@cov.com, gdischer@cov.com, asharma@cov.com, pchen@cov.com

PATENT OWNER: Robert Pluta, Amanda Bonner, Saqib Siddiqui, Bryan Nese, rpluta@mayerbrown.com, astreff@mayerbrown.com, ssiddiqui@mayerbrown.com, bnese@mayerbrown.com

Before LYNNE E. PETTIGREW, MINN CHUNG, and TERRENCE W. McMILLIN, Administrative Patent Judges.

TERMINATION

Settlement After Institution of Trial

35 U.S.C. § 317 and 37 C.F.R. § 42.74

CHUNG, Administrative Patent Judge.

***1** Upon Board authorization, Huawei Device Co., Ltd. ("Huawei" or "Petitioner") and Maxell, Ltd. ("Maxell" or "Patent Owner") filed a Joint Motion To Terminate this *inter partes* review on April 2, 2019. Paper 36 ("Mot."). Along with the Joint Motion, the parties filed a copy of a document they describe as "a true and complete copy" (*id.* at 1) of their written settlement agreement (Ex. 1024) covering various matters, including those involving the patent at issue in this proceeding. The parties certify that there are no other agreements or understandings, oral or written, between the parties, including any collateral agreements, made in connection with, or in contemplation of, the termination of this proceeding. Mot. 1. The parties also filed a joint request to treat the settlement agreement as business confidential information under 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c). Paper 37.

Under 35 U.S.C. § 317(a), "[a]n inter partes review instituted under this chapter shall be terminated with respect to any petitioner upon the joint request of the petitioner and patent owner, unless the Office has decided the merits of the proceeding before the request for termination is filed." In this proceeding, we have not yet reached a decision on the merits with respect to the patentability of any involved claim. Accordingly, we must terminate the review with respect to Huawei, as Petitioner.

Furthermore, "[i]f no petitioner remains in the inter partes review, the Office may terminate the review or proceed to a final written decision under section 318(a)." 35 U.S.C. § 317(a). We, therefore, have discretion to terminate this review with respect to Maxell.

Although a Decision on Institution instituting trial was entered on July 2, 2018 (Paper 8), we have not held an oral hearing and we have not entered a Final Written Decision on the merits in this proceeding. In their Joint Motion, the parties represent that the settlement agreement completely resolves the underlying disputes between the parties involving U.S. Patent No. 7,203,517 B2 (Ex. 1001, "the '517 patent") at issue in this proceeding. Mot. 2. When, as here, we have not entered a Final Written Decision on the merits, we generally will terminate the trial after the filing of a settlement agreement. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,768 (Aug. 14, 2012). Under the particular circumstances of this case, we determine that it is appropriate to terminate this *inter partes* review as to both Huawei and Maxell without rendering a Final Written Decision. *See* 35 U.S.C. § 317(a); 37 C.F.R. § 42.72.

After reviewing the parties' settlement agreement, we find the settlement agreement contains business confidential information regarding the terms of the settlement and good cause exists to treat the settlement agreement as business confidential information under 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c).

Accordingly, it is

ORDERED that the parties' joint request (Paper 37) to treat the parties' settlement agreement as business confidential information is *granted*;

***2** FURTHER ORDERED that the settlement agreement (Exhibit 1024) shall be treated as business confidential

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information, kept separate from the file of the '517 patent, and made available only to Federal Government agencies on written request to the Board, or to any person on a showing of good cause, under the provisions of 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c);

FURTHER ORDERED that the Joint Motion to Terminate this *inter partes* review (Paper 36) is *granted*; and

FURTHER ORDERED that this *inter partes* review is hereby *terminated*.

End of Document

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297 F.Supp.3d 668
United States District Court,
E.D. Texas, Texarkana Division.

MAXELL LTD., Plaintiff,
v.
HUAWEI DEVICE USA INC.,
Huawei Device Co., Ltd., Defendants.
Maxell Ltd., Plaintiff,
v.
ZTE Corporation, ZTE
USA Inc., Defendants.

CIVIL ACTION NO. 5:16–CV–00178–RWS,
CIVIL ACTION NO. 5:16–CV–00179–RWS
|
Signed 01/31/2018
|
Filed 03/19/2018

Synopsis

Background: Patentee filed suits against alleged infringers of patents related to wireless communication systems, techniques for determining position of device, method for reproducing recorded moving and still pictures, machine-readable recording medium having moving and still pictures recorded thereon, power management, navigation systems, electric cameras, cellular telephones, and audio decoding. Suits were consolidated.

Holdings: The District Court, Robert W. Schroeder III, J., held that:

[1] patent claim terms were construed, and

[2] claim in patent relating to wireless communication systems was not invalid for indefiniteness.

Ordered accordingly.

West Headnotes (75)

[1] **Patents** ⚭ Claims as measure of patentee's rights

The claims of a patent define the invention to which the patentee is entitled the right to exclude.

[2] **Patents** ⚭ Intrinsic evidence in general

Patents ⚭ Multiple sources for construction

District court examines a patent's intrinsic evidence to define the patented invention's scope; "intrinsic evidence" includes the claims, the rest of the specification, and the prosecution history.

[3] **Patents** ⚭ Plain, ordinary, or customary meaning in general

Patents ⚭ State of the art

District court gives patent claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention.

[4] **Patents** ⚭ Language of claims in general

Patent claim language guides the district court's construction of claim terms.

[5] **Patents** ⚭ Context

In construing disputed terms of a patent claim, the context in which a term is used in the asserted claim can be highly instructive; other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent, and differences among claims, such as additional limitations in dependent claims, can provide further guidance.

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[6] **Patents** ⇐ Specifications and Drawings; Written Description

Patent claims must be read in view of the specification, of which they are a part.

1 Cases that cite this headnote

[7] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed claim term.

[8] **Patents** ⇐ Specification disclaimer

Patents ⇐ Contemporaneous construction

In the specification for a patent, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope.

[9] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

Although the district court generally presumes patent claim terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer; however, the presumption does not arise when the patentee acts as his own lexicographer.

[10] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent may resolve ambiguous patent claim terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.

[11] **Patents** ⇐ Preferred embodiment in general

A patent claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.

[12] **Patents** ⇐ Preferred embodiment

Although the specification for a patent may aid the district court in interpreting the meaning of disputed language in the patent claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.

[13] **Patents** ⇐ Questions of law or fact

A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes.

[14] **Patents** ⇐ Extrinsic Evidence

Patents ⇐ Questions of law or fact

For certain patent claim terms, the district court may need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand the background science or the meaning of a term in the relevant art during the relevant time period; in cases where those subsidiary facts are in dispute, the court will need to make subsidiary factfindings about that extrinsic evidence.

[15] **Patents** ⇐ Extrinsic Evidence

Although extrinsic evidence is useful, it is less significant than the intrinsic record in determining the legally operative meaning of patent claim language.

[16] **Patents** ⇐ State of the art

Patents ⇐ Dictionaries, encyclopedias, treatises, and other reference works

Technical dictionaries and treatises may help district court understand the underlying technology and the manner in which one skilled in the art might use patent claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

[17] **Patents** ⟜ Expert and inventor testimony

Expert testimony may aid district court in understanding the underlying technology and determining the particular meaning of a patent claim term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful in construing the claims.

[18] **Patents** ⟜ Extrinsic Evidence

Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read patent claim terms.

[19] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

There are only two exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning: (1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.

[20] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

To fall within the exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the standards for finding lexicography or disavowal that trigger the exceptions are exacting.

[21] **Patents** ⟜ Contemporaneous construction

To act as his own lexicographer, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee must clearly set forth a definition of the disputed claim term and clearly express an intent to define the term.

[22] **Patents** ⟜ Contemporaneous construction

In acting as his own lexicographer, as required to fall within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's lexicography must appear with reasonable clarity, deliberateness, and precision.

[23] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

To disavow or disclaim the full scope of a claim term, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's statements in the specification or prosecution history must amount to a clear and unmistakable surrender; however, where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.

[24] **Patents** ⟜ Functions, means, and results of invention

A patent claim may be expressed using functional language. 35 U.S.C.A. § 112.

[25] **Patents** ⟜ Functions, means, and results of invention

Patents ⟜ Step-plus-function claims

For a patent claim expressed using functional language, a structure may be claimed as a means for performing a specified function, and an act

may be claimed as a step for performing a specified function. 35 U.S.C.A. § 112.

[26] **Patents** ⚭ Functions, means, and results of invention

Patents ⚭ Step-plus-function claims

There is a rebuttable presumption that the statutory provision, stating that a structure may be claimed as a means for performing a specified function and that an act may be claimed as a step for performing a specified function, applies when the patent claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms; the presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. 35 U.S.C.A. § 112.

[27] **Patents** ⚭ Functions, means, and results of invention

When it applies, the statutory provision governing means-plus-function limitations for a patent claim, limits the scope of the functional term to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof. 35 U.S.C.A. § 112.

[28] **Patents** ⚭ Functions, means, and results of invention

Construing a means-plus-function limitation for a patent claim involves multiple steps: the first step is a determination of the function of the means-plus-function limitation, and the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof. 35 U.S.C.A. § 112.

[29] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, a structure disclosed in the patent's specification is "corresponding structure" only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. 35 U.S.C.A. § 112.

1 Cases that cite this headnote

[30] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is clearly linked or associated with the recited function. 35 U.S.C.A. § 112.

[31] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the corresponding structure must include all structure that actually performs the recited function; however, incorporation of structure from the written description is not permitted beyond that necessary to perform the claimed function. 35 U.S.C.A. § 112.

[32] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation in a patent claim, for limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function; the corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. § 112.

[33] **Patents** ⚭ Ambiguity, Uncertainty, or Indefiniteness

A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. 35 U.S.C.A. § 112.

[34] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Whether a patent claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. 35 U.S.C.A. § 112.

[35] **Patents** ⇐ Weight and sufficiency

As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with the definiteness requirement must be shown by clear and convincing evidence. 35 U.S.C.A. § 112.

[36] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Patents ⇐ Questions of law or fact

Indefiniteness is a question of law and in effect part of patent claim construction.

[37] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In analyzing definiteness of patent claims, when a term of degree is used in a claim, district court must determine whether the patent provides some standard for measuring that degree; likewise, when a subjective term is used in a claim, the court must determine whether the patent's specification supplies some standard for measuring the scope of the limitation. 35 U.S.C.A. § 112.

[38] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In the context of a patent claim governed by the statutory requirements for means-plus-function limitations, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions; the disclosure is inadequate when one of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim. 35 U.S.C.A. § 112.

[39] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

The definiteness standard requires that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty; the definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable. 35 U.S.C.A. § 112.

[40] **Patents** ⇐ Correction or amendment in general

A district court can act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued only if: (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and (2) the prosecution history does not suggest a different interpretation of the claims.

[41] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

If the patent claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. 35 U.S.C.A. § 112.

[42] **Patents** ⇐ Radio and telecommunications equipment

"A storage unit in which group information generated by classifying the plurality of base stations into groups," in patent relating to

methods for selecting, from multiple base stations within wireless system, one base station for communication with terminal, meant a storage unit in which group information generated by classifying the plurality of base stations into groups is stored.

[43] **Patents** ⚙ Particular products or processes

In patent relating to wireless communication systems, claim describing "storage unit in which group information generated by classifying the plurality of base stations into groups" was not invalid for indefiniteness, although claim as drafted contained error that patentee sought to have corrected at United States Patent and Trademark Office (USPTO) via certificate of correction by adding "is stored" at end of claim term, since correction adding "is stored" at end of claim term was not subject to reasonable debate based on claim language and specification, and prosecution history did not suggest different interpretation of claim. 35 U.S.C.A. § 112.

[44] **Patents** ⚙ Radio and telecommunications equipment

"Combining," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merging.

[45] **Patents** ⚙ Radio and telecommunications equipment

"Combined," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merged.

[46] **Patents** ⚙ Radio and telecommunications equipment

"GPS or cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability.

[47] **Patents** ⚙ Radio and telecommunications equipment

"Cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result.

[48] **Patents** ⚙ Radio and telecommunications equipment

"GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating GPS positioning reliability based on the GPS-based position result.

[49] **Patents** ⚙ Radio and telecommunications equipment

"Cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating cellular positioning reliability based on the cellular-based position result.

[50] **Patents** ⚙ Specification as limiting or enlarging claims in general

Even if a patent claim limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification.

[51] **Patents** ⇐ Data processing

"Still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded," in patent relating to method for reproducing recorded moving and still pictures, had its plain and ordinary meaning.

[52] **Patents** ⇐ Rejection and Amendment of Claims; Prosecution History

The prosecution history for a patent often lacks the clarity of the specification and thus is less useful for claim construction purposes.

[53] **Patents** ⇐ Data processing

"First encoding method," in patent related to machine-readable recording medium having moving and still pictures recorded thereon, had its plain and ordinary meaning.

[54] **Patents** ⇐ Radio and telecommunications equipment

"Selection switching determination unit for," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, meant selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

[55] **Patents** ⇐ Radio and telecommunications equipment

"Waits a longer time until switching," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, had its plain and ordinary meaning.

[56] **Patents** ⇐ Electricity and Electronics

"Detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus," in patent related to techniques for conserving battery power by providing for power-saving state, meant detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus.

[57] **Patents** ⇐ Data processing

"Walking navigation," in patent related to portable terminals suitable for walking navigation, meant information to navigate a user who is walking.

[58] **Patents** ⇐ Data processing

"Said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server," in patent related to portable terminals suitable for walking navigation, meant outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server.

[59] **Patents** ⇐ Functions, means, and results of invention

Though a patent claim term that does not use "means" is presumed not to be a means-plus-function term, the term "device" may be a nonce word that is tantamount to using the word "means." 35 U.S.C.A. § 112.

[60] **Patents** ⚭ Photography; imaging and graphic arts

"Image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[61] **Patents** ⚭ Photography; imaging and graphic arts

"Image stability detector," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera.

[62] **Patents** ⚭ Photography; imaging and graphic arts

"Amount of image-instability of the camera," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant amount of instability caused by vertical and/or horizontal movement of the electric camera.

[63] **Patents** ⚭ Photography; imaging and graphic arts

"To change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability.

[64] **Patents** ⚭ Photography; imaging and graphic arts

"Display unit configured to display an image corresponding to the image signals formed by the signal processing unit," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[65] **Patents** ⚭ Preferred embodiment in general

Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.

[66] **Patents** ⚭ Radio and telecommunications equipment

"Variable amplitude amplifier," in patent related to cellular telephone with improved means for controlling transmitter output power while reducing current consumption to conserve battery life, meant amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

[67] **Patents** ⚭ Electricity and Electronics

"Function devices equipped with independent functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant equipped with independent functions.

[68] Patents ⇐ Electricity and Electronics

"Component devices for performing different functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant performing different functions.

[69] Patents ⇐ Data processing

"Controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[70] Patents ⇐ Data processing

"Controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[71] Patents ⇐ Data processing

"Demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[72] Patents ⇐ Data processing

"Controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[73] Patents ⇐ In general; utility

US Patent 5,396,443, US Patent 6,329,794, US Patent 6,408,193, US Patent 6,748,317, US Patent 6,754,440, US Patent 6,816,491, US Patent 6,856,760, US Patent 6,928,292, US Patent 7,116,438, US Patent 7,203,517, US Patent 7,671,901, US Patent 8,098,695, US Patent 8,339,493, US Patent 8,736,729. Construed.

[74] Patents ⇐ In general; utility

US Patent 6,424,795, US Patent 6,765,616, US Patent 7,295,767, US Patent 7,447,241, US Patent 7,457,529, US Patent 7,995,897, US Patent 8,057,177, US Patent 8,417,088. Cited.

[75] **Patents** ⚭ In general; utility

US Patent 7,509,139. Construed and Valid.

Go to Markman Construed Terms

Attorneys and Law Firms

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CLAIM CONSTRUCTION MEMORANDUM AND ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***677** On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, ——— L.Ed.2d ——— (2015).

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); 8,339,493 ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8–10.

APPLICABLE LAW

[1] **[2]** **[3]** "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)

(quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

***678** [4] [5] Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

[6] [7] [8] [9] "[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

[10] [11] [12] The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.' " *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

[13] [14] "A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ––– U.S. ––––, 135 S.Ct. 831, 840–41, ––– L.Ed.2d ––– (2015). For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id.* at 841. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

[15] [16] [17] [18] Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions ***679** that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

[19] [20] There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain

and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

[21] **[22]** To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

[23] To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

[24] **[25]** A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means ... for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

[26] But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional ***680** language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap–On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Personalized Media Communications, L.L.C. v. Int'l Trade Com'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (" '[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means' ")

[27] **[28]** **[29]** **[30]** **[31]** When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291,

1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

[32] For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

[33] **[34]** **[35]** **[36]** Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.' " *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, ------ U.S. ------, 134 S.Ct. 2120, 2124, 189 L.Ed.2d 37 (2014)). Whether a claim is indefinite is determined from the perspective ***681** of one of ordinary skill in the art as of the time the application for the patent was filed. *Nautilus*, 134 S.Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

[37] When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

[38] In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

Term	Agreed Construction
"at least approaches" ('443 Patent claim 1)	Plain and ordinary meaning
"simultaneously" ('292 Patent claims 1 and 2)	Plain and ordinary meaning
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising" / "A mobile communication terminal device	The preambles of claims 1 and 9 of the '517 patent are limiting.

having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising"	
***682** ('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim 1)	

"means for selecting an object displayed on said display apparatus" ('438 Patent claim 3)	**Function**: selecting an object displayed on said display apparatus **Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. *See, e.g.,* 8:57–9:13, 7:52–8:6, Fig. 2 (106).
"operate to the end" ('794 Patent claims 8 and 14)	Plain and ordinary meaning
***683** "a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed" ('491 Patent claim 9)	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed **Structure**: An antenna and equivalents
Preambles ('491 Patent claims 7–9)	The preambles of claims 7–9 are not limiting.
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences" ('491 Patent claims 1 and 2)	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a first memory" ('491 Patent claims 1, 2, and 7)	Plain and ordinary meaning
"a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning

('491 Patent claim 2)	
"from an outside"	Plain and ordinary meaning
('491 Patent claim 7)	
"an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1)	
"a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10)	
***684** "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15)	
"an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines"	Plain and ordinary meaning
('493 Patent claim 5)	
"a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5)	
"an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6)	
"an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6)	
"an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"bias condition"	"the bias voltage and/or current setting of the amplifier"

('193 Patent claims 1 and 7)	
"a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7)	
"capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1)	
"controller for controlling operation of said function devices based on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1)	
"a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9)	
Preambles	Preambles are limiting
***685** ('695 Patent, all asserted claims)	
"packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4)	
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a state display means including a display means and for displaying on said display means that said apparatus is in one of a standby state and an active state in response	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said

to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	power saving state and said non- power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display device in accordance with the procedures set forth e.g. in the specification at 4:6– 9; 4:49–55; 5:30–37; 7:7–60; 8:64– 68; Figs. 2–4 and 11–13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones ***686** of the moving pictures corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. *See, e.g.*, Figure 6 (130); 13:45–47; 13:49–51; 13:54–57; 13:62–63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43–46; 13:47–49; 13:52–55; 13:60–61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing quantities of the communication quality for each of the groups" ('139 Patent claims 1 and 11)	"group scores derived from the indication of communication quality for each base station in a group"

Docket No. 115–2at B–1–B–14.

At the oral hearing the parties also agreed to the constructions of the following terms:

***687** "GPS receiver means for receiving GPS oriented signals and generating received GPS signals" ('292 Patent claim 1)	**Function**: receiving GPS oriented signals and generating received GPS signals **Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24–32, 2:53–57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals" ('292 Patent claim 1)	**Function**: receiving cellular-oriented signals and generating received cellular signals **Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66–3:4, 4:4–9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result" ('292 Patent claim 1)	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result **Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54–57, 2:57– 60, 3:24–32, 3:33–43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value" ('901 Patent claim 1)	"in response to any change occurring in the video signal inputted to the input portion" "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
"an input entered by the user" ('438 Patent claim 1)	Plain and ordinary meaning
"a cellular telephone adapted to be used in a CDMA system, comprising" ('193 Patent, all asserted claims)	The preambles are limiting

H'rg Tr. at 6:7–10, 111:19–112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of ***688** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37–64, 4:45–5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite: because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Huawei contends that the claim language contains "an obvious grammatical error that renders the term indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100–1 (Akl. Decl.) at ¶¶ 173–75, 186–188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187–90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3–11; Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited ***689** to the RAM embodiment. *Id.* (citing Docket No. 106–7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.' " *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11–12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

[39] **[40]** **[41]** The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S.Ct. at 2129–30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in

a patent by interpretation of a patent where no certification of correction has been issued ... only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)).

[42] [43] The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173–79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

*690 Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24–4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4–34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43–56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination based on one or more inputs"	"merging" / "merged"

Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24–25 (citing '292 Patent 3:64–4:3, 4:36–42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64–4:3, 4:36–42; Docket

No. 95–1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

***691** Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination may be enhanced' by 'using **both** GPS and cellular signals' 'compared to ... using either ... alone.' " *Id.* (citing '292 Patent 4:1–3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17–18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18–19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344 (Fed. Cir. 2006)). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1–27:21, 29:6–30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64–4:3, 4:36–42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1–3, 3:33–59, 3:64–4:3, 4:10–35, 4:36–42. Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. *Id.* at 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2–3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] ***692** positioning means [with] the reliability of the positioning... [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13–18. The specification describes a mathematical function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64–4:3, 4:36–42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43–56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13–18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (requiring claim construction disputes to be resolved).

[44] [45] Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS/cellular positioning results combining unit 400 and its components within a mobile handset that performs processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. See e.g., (4:42–56), (Fig. 3 at 400); (3:12–17), (5:3–7).	**Function:** combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49–56, block 606 in Fig. 2

***693** The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result 202 has no effect on further processing.

Id. at 23–24 (citing '292 Patent 3:64–4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95–1 (Braasch Decl.) ¶¶ 50–51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64–4:3, 4:36–42).

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50–51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16–21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49–56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36–41 of 4:36–56 is not structure for the combiner; 4:42–56 is subsumed by Figure 3; 3:64–4:3 (same); 3:12–17 (inputs and outputs, not structure); 5:3–7 (same)); and citing Akl Decl. at ¶¶ 157–68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history

clearly links or associates that structure to the function recited in the claim." *Medtronic Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed ***694** function. '292 Patent 4:43–56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64–4:3, 4:36–42, 4:49–56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49–50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc.*, 248 F.3d at 1311. The structure adopted below is the corresponding disclosed structure.

[46] The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12–17, 3:64–4:3, 4:36–56, or equivalents thereof.

8. "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result. **Structure:** A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding recitations in the specification as provided herein, or equivalents thereof. See, e.g., (1:20–27); (3:30–31; block 604 in Fig. 2); (4:4–16); (2:66–3:6); (5:3–7).	**Function:** (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular-based position result. **Structure:** position calculation unit 301 cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

***695** As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4–16; *see also* '292 Patent 2:66–3:6 (describing receiver operations); '292 Patent 1:23–23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21–22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26–28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[ ] the receive operations" of baseband signal modulation, synchronization acquisition, and reception

timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46–48, '292 Patent 3:24–32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result L_{cell}'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block ('Calculate positioning result L_{cell}'). Docket No. 100 at 22 (citing '292 Patent Figures 1–2, 3:4–11, 4:10–15; Akl Decl. at ¶¶ 131–35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus*, 700 F.3d at 519–20). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated-or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, " 'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132–37). Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's ***696** briefing on a motion to dismiss under section 101. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions ... [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3–4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4–16, 2:66–3:6, 1:24–29, Braasch Decl. at ¶¶ 46–48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) that performs cellular position calculation processes as described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4–16, 2:66–3:6, 1:24–29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11–13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4–16 and 2:66–3:6. However, the specification does disclose in the passage at 1:24–29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48–2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14–17, 46:18–23.

[47] Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23–27, 4:4–16, 2:66–3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1)

***697**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure:** A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding sections in the specification as provided herein, or equivalents thereof. (See e.g., '292 Pat. 6:8; block 602 in Fig. 2; 5:58–6:15; 6:3–7).	**Function:** calculating GPS positioning reliability based on the GPS-based position result **Structure:** GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used....
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205....

Docket No. 95 at 18 (citing '292 Patent 3:44–4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize that these processing steps will be executed by a processor. *Id.* Maxell ***698** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS-and cellular-position estimates depending on the reliability for each position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12–17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites ... and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60–65, 3:44–4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22–34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19–20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012); *ePlus*, 700 F.3d at 519–20; Akl Dec. ¶¶ 102–10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112–13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus*, 700 F.3d at 518).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44–4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6–11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations ***699** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49–53, 3:60–63, 4:27–34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60–65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for GPS 201....

'292 Patent 3:44–47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites... and the received signal quality of the signals from the GPS satellites." '292 Patent 3:38–42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50–59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

[48] Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60–65, 3:38–4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1)

***700**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure:** A cellular reliability calculation unit 304 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (Block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. (3:6–11; 4:15–42; Fig. 2), (4:15–42), (3:6–11; 4:3–7).	**Function:** calculating cellular positioning reliability based on the cellular-based position result **Structure:** cellular reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22–23 (quoting '292 Patent 3:6–11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for L_{cell} 605 using the number of cellular base stations used in calculating L_{cell} and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6–10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning results combining unit 400.

'292 Patent 4:22–27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations ... and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18–20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31–35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

[49] The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

***701 Structure**: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate cellular positioning reliability, as disclosed at 3:6–10, 4:15–42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures and which have

pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

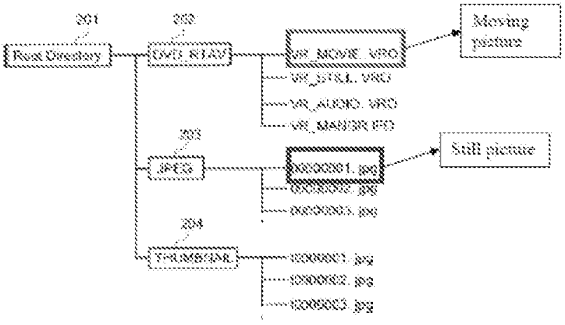
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41–11:14, 11:31–12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

***702** Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method...." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10–11. Maxell points to Figure 2 and Figure 4 as showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id.(citing '440 Patent Figure 4 (emphasis added), 10:49–51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61–63 ("if no fine still picture signal is output ... the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine still pictures and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2–8 (citing '440 Patent 11:15–18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

***703** In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11–12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving

picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003)). Huawei contends that the '440 Patent describes the "present invention" as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50–59, 2:59–3:20, 4:52–60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3–8 (first embodiment), 9:36–42 (second embodiment), 12:38–41 (third embodiment), 13:58–62 (fourth embodiment)).

Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100–19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-picture-only player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100–19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13–14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61–63).

At the oral hearing, Huawei further pointed to the file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1–8 as:

***704**

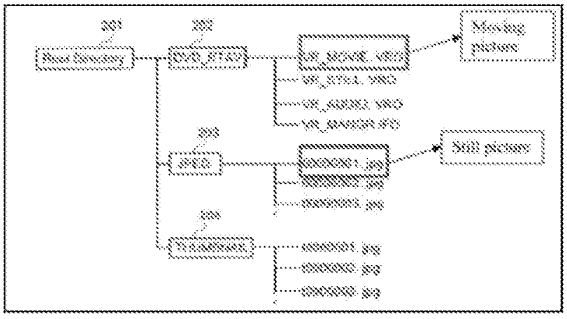
Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1-8, and Anderson, as follows.

Claims 1-8	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
First picture	X (no disclosure)
Second picture	Thumbnail and Screennail

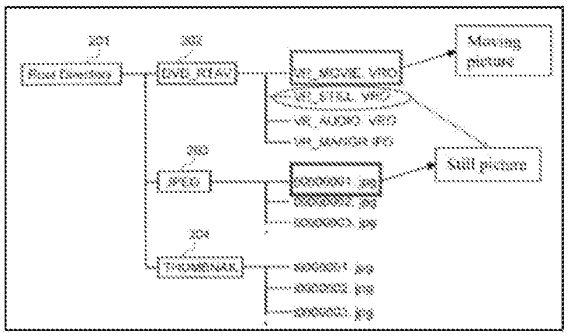
It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

Docket No. 119–3at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2–74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



***705** Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file ... as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under the JPEG directory 203 ....' " *Id.* (quoting '440 Patent 11:2–8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14–15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1315 (Fed. Cir. 2010)). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12–71:3 (citing '440 Patent 2:5–11, 2:12–17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 106 at 2 (citing Docket No. 106–1 at 15:12–13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106–2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106–3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106–4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106–5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations ***706** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[50] Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal

is output." *Id.* at 12:51–64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100–19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See Phillips*, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures ***707** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims 1–8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.' " Docket No. 119–3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See Phillips*, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also Athletic Alternatives, Inc.*, 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

[51] The Court construes the term "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 **Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15**)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures, including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5–7, 8:9–11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14–15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method *and* a still picture encoding method. Docket No. 100 at 15. According to ***708** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by..." term to assert that encoding a still picture using both a still picture encoding

method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second encoding method and other still pictures encoded by the first encoding method from single frame signals ...

Id. at 16 (citing '760 Patent 2:50–57; 2:58–3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5–12 (same), 4:51–59 (same), 4:60–67 (same), 5:4–13 (same), 5:14–20 (same), 5:24–30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:

Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares claimed Claims 1 and 2, and Anderson, as follows.

Claims 1 and 2	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
A picture	Thumbnail
X (no disclosure)	Screennail

It is clear that Anderson doesn't disclose Applicant's "first still picture"

Id.(citing Docket No. 100–23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports ***709** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100–23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[52] As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and "second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100–23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips*, 415 F.3d at 1317. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Such is the case here, with statements that do not overcome the claim's clear reference to merely "first" and "second" encoding methods.

[53] Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58–2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

***710** '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5–61, 7:1–8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster"

('517 Patent claim 1)

Maxell's Proposed Construction[1]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Physical interface selection unit 108, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding explanations in the specification as provided herein, or equivalents thereof. See e.g., ('517 Patent 3:5–27, 3:50–61, 7:1–8, 4:48–7:32 & 8:52–9:52, 10:42–12:21, and 13:5–14:).	**Function:** selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability, determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time** until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9 which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

[**Editor's Note:** The preceding image ***711** contains the reference for footnote[3]]

The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33–39, 3:50–61, 4:41–50 and Docket No. 100–2 (Wells Decl.) ¶ 43, *Noah Systems*, 675 F.3d at 1317 and *ePlus*, 700 F.3d at 519–20).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving

speed at all in determining how long to wait before switching even though claim 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407–1) but does not vary the wait time before switching. *Id.* at 27–28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface when it becomes unavailable. *Id.* (citing '517 Patent 6:62–7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62–7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5–10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing ***712** '517 Patent 3:23–31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3–60, 5:25–46, 8:1–9, 8:53–67, Docket No. 106–6 (Caloyannides Decl. B) ¶¶ 27–28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25–28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62–7:8). Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32–68). Maxell contends this is because of different "Rest–State" and "Moving–State" priorities identified in Figure 4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58–9:18, 9:54–10:9).

Maxell contends that the specification provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the

claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. § 112 ¶ 6 is not disclosed. *See WMS Gaming Inc.*, 184 F.3d at 1349; *Aristocrat Techs.*, 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block ***713** S407), Figure 9 (block S910), 5:3–14; 6:28–35, 6:45–52, 6:53–62, 9:5–18, 9:54–10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather high speed versus low speed movement. H'rg Tr. at 96:2–14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45–67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3–14 and 9:5–18. *Id.* at 92:12–94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64–5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2–18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62–7:8. This disclosure does not describe different wait times based on determining the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d at 1349.

[54] Accordingly, the Court construes the "selection switching determination unit for ..." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1)

***714**

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66–7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26–27. Maxell also relies on the "may be set" language to counter Huawei's argument that the time is always set in advance. Docket No. 106 at 6. As to the

reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62–7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24–25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58–64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally ***715** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100–24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing '517 Patent 6:66–7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62–7:8). Huawei contends that "may" only means that the fixed time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62–7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23–84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

[55] The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches ***716** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1–24, 3:58–4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: detecting whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure:** an image sensor, a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents thereof.	This term is written as a means-plus-function element. **Function:** for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure:** Electromagnetic induction systems, electrostatic coupling systems, and Optical systems, listed in Table 1; "image sensor" (10:32); "microphone" (10:33); "temperature sensor" (10:33); "cameras" (Figs. 34 and 35)

The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2–6; 4:19–23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42–46). Maxell further ***717** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26–27), "pressure sensitive resistance system tablet" ('443 Patent at 11:27–28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28–29), and several others. Docket No. 95 at 7–8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34–36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices ..." ('443 Patent at 11:36–40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance

system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> {a)} a detecting means for detecting whether {an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user} a user-associated medium at least approaches {or comes in contact with a whole of or} at least a part of a housing of {the} said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car due to running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723 Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

***724**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an equal number of vertically arranged pixel lines" (claim 59) See also FIGS. 1B, 13A, and 13B; (6:47–52); (15:28–35)

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

***725**

'293 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1)

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"the amount of instability caused by vertical and/or horizontal movement of the electric camera"	Indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television set/set" (3:22–23) or other screen compatible with NTSC or PAL format (1:33–36; 10:39–41)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

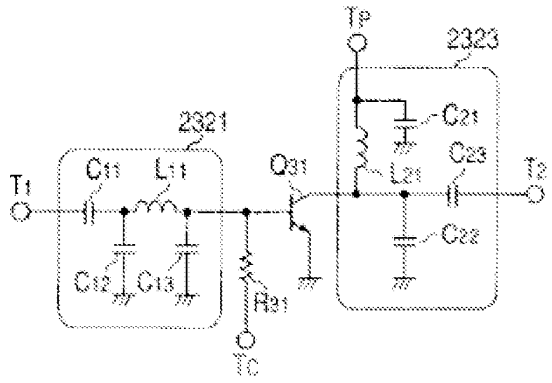
28. "variable amplitude amplifier" **('193 Patent claims 1 and 7)**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"Hardware, software, or a combination of the two that sometimes powers and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** At least one processor, such as a CPU, programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1, S9), Fig. 5 (including steps S3, S3-1) and corresponding citations in the specification at 3:66–4:4, 6:30–7:54, 9:15–18, 9:28–48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read-only memory to said second memory, as reference, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" **Structure:** claim 1: "a processor (FIG 1) connected via a bus between a read-only memory and the first memory, running the algorithm of Figs. 4 and 5, (at 9:6–7:54)

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
>
> z

Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 **Patent claims 1 and 4**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: as claimed ('695 Pat. col. 33 l. 1) controller of one is bus between a read only memory and the memory, running the algorithm of Figs. 4 and 5. (col. 30 l. 7-51)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

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Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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297 F.Supp.3d 668
United States District Court,
E.D. Texas, Texarkana Division.

MAXELL LTD., Plaintiff,

v.

HUAWEI DEVICE USA INC., Huawei Device Co., Ltd., Defendants.

Maxell Ltd., Plaintiff,

v.

ZTE Corporation, ZTE USA Inc., Defendants.

CIVIL ACTION NO. 5:16–CV–00178–RWS,
CIVIL ACTION NO. 5:16–CV–00179–RWS
|
Signed 01/31/2018
|
Filed 03/19/2018

Synopsis

Background: Patentee filed suits against alleged infringers of patents related to wireless communication systems, techniques for determining position of device, method for reproducing recorded moving and still pictures, machine-readable recording medium having moving and still pictures recorded thereon, power management, navigation systems, electric cameras, cellular telephones, and audio decoding. Suits were consolidated.

Holdings: The District Court, Robert W. Schroeder III, J., held that:

[1] patent claim terms were construed, and

[2] claim in patent relating to wireless communication systems was not invalid for indefiniteness.

Ordered accordingly.

West Headnotes (75)

[1] **Patents** ⚭ Claims as measure of patentee's rights

The claims of a patent define the invention to which the patentee is entitled the right to exclude.

[2] **Patents** ⚭ Intrinsic evidence in general

Patents ⚭ Multiple sources for construction

District court examines a patent's intrinsic evidence to define the patented invention's scope; "intrinsic evidence" includes the claims, the rest of the specification, and the prosecution history.

[3] **Patents** ⚭ Plain, ordinary, or customary meaning in general

Patents ⚭ State of the art

District court gives patent claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention.

[4] **Patents** ⚭ Language of claims in general

Patent claim language guides the district court's construction of claim terms.

[5] **Patents** ⚭ Context

In construing disputed terms of a patent claim, the context in which a term is used in the asserted claim can be highly instructive; other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent, and differences among claims, such as additional limitations in dependent claims, can provide further guidance.

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[6] **Patents** ⇐ Specifications and Drawings; Written Description

Patent claims must be read in view of the specification, of which they are a part.

1 Cases that cite this headnote

[7] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed claim term.

[8] **Patents** ⇐ Specification disclaimer

Patents ⇐ Contemporaneous construction

In the specification for a patent, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope.

[9] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

Although the district court generally presumes patent claim terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer; however, the presumption does not arise when the patentee acts as his own lexicographer.

[10] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent may resolve ambiguous patent claim terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.

[11] **Patents** ⇐ Preferred embodiment in general

A patent claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.

[12] **Patents** ⇐ Preferred embodiment

Although the specification for a patent may aid the district court in interpreting the meaning of disputed language in the patent claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.

[13] **Patents** ⇐ Questions of law or fact

A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes.

[14] **Patents** ⇐ Extrinsic Evidence

Patents ⇐ Questions of law or fact

For certain patent claim terms, the district court may need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand the background science or the meaning of a term in the relevant art during the relevant time period; in cases where those subsidiary facts are in dispute, the court will need to make subsidiary factfindings about that extrinsic evidence.

[15] **Patents** ⇐ Extrinsic Evidence

Although extrinsic evidence is useful, it is less significant than the intrinsic record in determining the legally operative meaning of patent claim language.

[16] **Patents** ⇐ State of the art

Patents ⇐ Dictionaries, encyclopedias, treatises, and other reference works

Technical dictionaries and treatises may help district court understand the underlying technology and the manner in which one skilled in the art might use patent claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

[17] **Patents** ⇐ Expert and inventor testimony

Expert testimony may aid district court in understanding the underlying technology and determining the particular meaning of a patent claim term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful in construing the claims.

[18] **Patents** ⇐ Extrinsic Evidence

Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read patent claim terms.

[19] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

There are only two exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning: (1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.

[20] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

To fall within the exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the standards for finding lexicography or disavowal that trigger the exceptions are exacting.

[21] **Patents** ⇐ Contemporaneous construction

To act as his own lexicographer, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee must clearly set forth a definition of the disputed claim term and clearly express an intent to define the term.

[22] **Patents** ⇐ Contemporaneous construction

In acting as his own lexicographer, as required to fall within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's lexicography must appear with reasonable clarity, deliberateness, and precision.

[23] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

To disavow or disclaim the full scope of a claim term, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's statements in the specification or prosecution history must amount to a clear and unmistakable surrender; however, where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.

[24] **Patents** ⇐ Functions, means, and results of invention

A patent claim may be expressed using functional language. 35 U.S.C.A. § 112.

[25] **Patents** ⇐ Functions, means, and results of invention

Patents ⇐ Step-plus-function claims

For a patent claim expressed using functional language, a structure may be claimed as a means for performing a specified function, and an act

may be claimed as a step for performing a specified function. 35 U.S.C.A. § 112.

[26] **Patents** ⚭ Functions, means, and results of invention

Patents ⚭ Step-plus-function claims

There is a rebuttable presumption that the statutory provision, stating that a structure may be claimed as a means for performing a specified function and that an act may be claimed as a step for performing a specified function, applies when the patent claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms; the presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. 35 U.S.C.A. § 112.

[27] **Patents** ⚭ Functions, means, and results of invention

When it applies, the statutory provision governing means-plus-function limitations for a patent claim, limits the scope of the functional term to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof. 35 U.S.C.A. § 112.

[28] **Patents** ⚭ Functions, means, and results of invention

Construing a means-plus-function limitation for a patent claim involves multiple steps: the first step is a determination of the function of the means-plus-function limitation, and the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof. 35 U.S.C.A. § 112.

[29] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, a structure disclosed in the patent's specification is "corresponding structure" only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. 35 U.S.C.A. § 112.

1 Cases that cite this headnote

[30] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is clearly linked or associated with the recited function. 35 U.S.C.A. § 112.

[31] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the corresponding structure must include all structure that actually performs the recited function; however, incorporation of structure from the written description is not permitted beyond that necessary to perform the claimed function. 35 U.S.C.A. § 112.

[32] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation in a patent claim, for limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function; the corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. § 112.

[33] **Patents** ⚭ Ambiguity, Uncertainty, or Indefiniteness

A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. 35 U.S.C.A. § 112.

[34] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Whether a patent claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. 35 U.S.C.A. § 112.

[35] **Patents** ⇐ Weight and sufficiency

As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with the definiteness requirement must be shown by clear and convincing evidence. 35 U.S.C.A. § 112.

[36] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Patents ⇐ Questions of law or fact

Indefiniteness is a question of law and in effect part of patent claim construction.

[37] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In analyzing definiteness of patent claims, when a term of degree is used in a claim, district court must determine whether the patent provides some standard for measuring that degree; likewise, when a subjective term is used in a claim, the court must determine whether the patent's specification supplies some standard for measuring the scope of the limitation. 35 U.S.C.A. § 112.

[38] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In the context of a patent claim governed by the statutory requirements for means-plus-function limitations, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions; the disclosure is inadequate when one of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim. 35 U.S.C.A. § 112.

[39] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

The definiteness standard requires that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty; the definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable. 35 U.S.C.A. § 112.

[40] **Patents** ⇐ Correction or amendment in general

A district court can act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued only if: (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and (2) the prosecution history does not suggest a different interpretation of the claims.

[41] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

If the patent claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. 35 U.S.C.A. § 112.

[42] **Patents** ⇐ Radio and telecommunications equipment

"A storage unit in which group information generated by classifying the plurality of base stations into groups," in patent relating to

methods for selecting, from multiple base stations within wireless system, one base station for communication with terminal, meant a storage unit in which group information generated by classifying the plurality of base stations into groups is stored.

[43] **Patents** ⚙ Particular products or processes

In patent relating to wireless communication systems, claim describing "storage unit in which group information generated by classifying the plurality of base stations into groups" was not invalid for indefiniteness, although claim as drafted contained error that patentee sought to have corrected at United States Patent and Trademark Office (USPTO) via certificate of correction by adding "is stored" at end of claim term, since correction adding "is stored" at end of claim term was not subject to reasonable debate based on claim language and specification, and prosecution history did not suggest different interpretation of claim. 35 U.S.C.A. § 112.

[44] **Patents** ⚙ Radio and telecommunications equipment

"Combining," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merging.

[45] **Patents** ⚙ Radio and telecommunications equipment

"Combined," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merged.

[46] **Patents** ⚙ Radio and telecommunications equipment

"GPS or cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability.

[47] **Patents** ⚙ Radio and telecommunications equipment

"Cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result.

[48] **Patents** ⚙ Radio and telecommunications equipment

"GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating GPS positioning reliability based on the GPS-based position result.

[49] **Patents** ⚙ Radio and telecommunications equipment

"Cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating cellular positioning reliability based on the cellular-based position result.

[50] **Patents** ⚙ Specification as limiting or enlarging claims in general

Even if a patent claim limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification.

[51] **Patents** ⇐ Data processing

"Still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded," in patent relating to method for reproducing recorded moving and still pictures, had its plain and ordinary meaning.

[52] **Patents** ⇐ Rejection and Amendment of Claims; Prosecution History

The prosecution history for a patent often lacks the clarity of the specification and thus is less useful for claim construction purposes.

[53] **Patents** ⇐ Data processing

"First encoding method," in patent related to machine-readable recording medium having moving and still pictures recorded thereon, had its plain and ordinary meaning.

[54] **Patents** ⇐ Radio and telecommunications equipment

"Selection switching determination unit for," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, meant selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

[55] **Patents** ⇐ Radio and telecommunications equipment

"Waits a longer time until switching," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, had its plain and ordinary meaning.

[56] **Patents** ⇐ Electricity and Electronics

"Detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus," in patent related to techniques for conserving battery power by providing for power-saving state, meant detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus.

[57] **Patents** ⇐ Data processing

"Walking navigation," in patent related to portable terminals suitable for walking navigation, meant information to navigate a user who is walking.

[58] **Patents** ⇐ Data processing

"Said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server," in patent related to portable terminals suitable for walking navigation, meant outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server.

[59] **Patents** ⇐ Functions, means, and results of invention

Though a patent claim term that does not use "means" is presumed not to be a means-plus-function term, the term "device" may be a nonce word that is tantamount to using the word "means." 35 U.S.C.A. § 112.

[60] **Patents** ⚭ Photography; imaging and graphic arts

"Image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[61] **Patents** ⚭ Photography; imaging and graphic arts

"Image stability detector," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera.

[62] **Patents** ⚭ Photography; imaging and graphic arts

"Amount of image-instability of the camera," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant amount of instability caused by vertical and/or horizontal movement of the electric camera.

[63] **Patents** ⚭ Photography; imaging and graphic arts

"To change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability.

[64] **Patents** ⚭ Photography; imaging and graphic arts

"Display unit configured to display an image corresponding to the image signals formed by the signal processing unit," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[65] **Patents** ⚭ Preferred embodiment in general

Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.

[66] **Patents** ⚭ Radio and telecommunications equipment

"Variable amplitude amplifier," in patent related to cellular telephone with improved means for controlling transmitter output power while reducing current consumption to conserve battery life, meant amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

[67] **Patents** ⚭ Electricity and Electronics

"Function devices equipped with independent functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant equipped with independent functions.

[68] Patents ⇐ Electricity and Electronics

"Component devices for performing different functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant performing different functions.

[69] Patents ⇐ Data processing

"Controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[70] Patents ⇐ Data processing

"Controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[71] Patents ⇐ Data processing

"Demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[72] Patents ⇐ Data processing

"Controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[73] Patents ⇐ In general; utility

US Patent 5,396,443, US Patent 6,329,794, US Patent 6,408,193, US Patent 6,748,317, US Patent 6,754,440, US Patent 6,816,491, US Patent 6,856,760, US Patent 6,928,292, US Patent 7,116,438, US Patent 7,203,517, US Patent 7,671,901, US Patent 8,098,695, US Patent 8,339,493, US Patent 8,736,729. Construed.

[74] Patents ⇐ In general; utility

US Patent 6,424,795, US Patent 6,765,616, US Patent 7,295,767, US Patent 7,447,241, US Patent 7,457,529, US Patent 7,995,897, US Patent 8,057,177, US Patent 8,417,088. Cited.

[75] **Patents** ⇨ In general; utility

US Patent 7,509,139. Construed and Valid.

Go to Markman Construed Terms

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CLAIM CONSTRUCTION MEMORANDUM AND ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***677** On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, ——— L.Ed.2d ——— (2015).

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); 8,339,493 ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8–10.

APPLICABLE LAW

[1] **[2]** **[3]** "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)

(quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

***678** [4] [5] Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

[6] [7] [8] [9] "[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

[10] [11] [12] The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.' " *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

[13] [14] "A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ––– U.S. ––––, 135 S.Ct. 831, 840–41, ––– L.Ed.2d ––– (2015). For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id.* at 841. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

[15] [16] [17] [18] Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions ***679** that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

[19] [20] There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain

and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

[21] **[22]** To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

[23] To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

[24] **[25]** A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means ... for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

[26] But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional ***680** language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap–On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Personalized Media Communications, L.L.C. v. Int'l Trade Com'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (" '[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means' ")

[27] **[28]** **[29]** **[30]** **[31]** When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291,

1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

[32] For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

[33] **[34]** **[35]** **[36]** Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.' " *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, ------ U.S. ------, 134 S.Ct. 2120, 2124, 189 L.Ed.2d 37 (2014)). Whether a claim is indefinite is determined from the perspective ***681** of one of ordinary skill in the art as of the time the application for the patent was filed. *Nautilus*, 134 S.Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

[37] When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

[38] In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

Term	Agreed Construction
"at least approaches" ('443 Patent claim 1)	Plain and ordinary meaning
"simultaneously" ('292 Patent claims 1 and 2)	Plain and ordinary meaning
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising" / "A mobile communication terminal device	The preambles of claims 1 and 9 of the '517 patent are limiting.

having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising"	
***682** ('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim 1)	

"means for selecting an object displayed on said display apparatus" ('438 Patent claim 3)	**Function**: selecting an object displayed on said display apparatus **Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. *See, e.g.,* 8:57–9:13, 7:52–8:6, Fig. 2 (106).
"operate to the end" ('794 Patent claims 8 and 14)	Plain and ordinary meaning
***683** "a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed" ('491 Patent claim 9)	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed **Structure**: An antenna and equivalents
Preambles ('491 Patent claims 7–9)	The preambles of claims 7–9 are not limiting.
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences" ('491 Patent claims 1 and 2)	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a first memory" ('491 Patent claims 1, 2, and 7)	Plain and ordinary meaning
"a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning

('491 Patent claim 2)	
"from an outside"	Plain and ordinary meaning
('491 Patent claim 7)	
"an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1)	
"a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10)	
***684** "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15)	
"an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines"	Plain and ordinary meaning
('493 Patent claim 5)	
"a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5)	
"an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6)	
"an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6)	
"an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"bias condition"	"the bias voltage and/or current setting of the amplifier"

('193 Patent claims 1 and 7)	
"a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7)	
"capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1)	
"controller for controlling operation of said function devices based on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1)	
"a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9)	
Preambles	Preambles are limiting
***685** ('695 Patent, all asserted claims)	
"packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4)	
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a state display means including a display means and for displaying on said display means that said apparatus is in one of a standby state and an active state in response	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said

to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	power saving state and said non- power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display device in accordance with the procedures set forth e.g. in the specification at 4:6– 9; 4:49–55; 5:30–37; 7:7–60; 8:64– 68; Figs. 2–4 and 11–13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones ***686** of the moving pictures corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. *See, e.g.*, Figure 6 (130); 13:45–47; 13:49–51; 13:54–57; 13:62–63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43–46; 13:47–49; 13:52–55; 13:60–61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing quantities of the communication quality for each of the groups" ('139 Patent claims 1 and 11)	"group scores derived from the indication of communication quality for each base station in a group"

Docket No. 115–2at B–1–B–14.

At the oral hearing the parties also agreed to the constructions of the following terms:

***687** "GPS receiver means for receiving GPS oriented signals and generating received GPS signals" ('292 Patent claim 1)	**Function**: receiving GPS oriented signals and generating received GPS signals **Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24–32, 2:53–57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals" ('292 Patent claim 1)	**Function**: receiving cellular-oriented signals and generating received cellular signals **Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66–3:4, 4:4–9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result" ('292 Patent claim 1)	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result **Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54–57, 2:57– 60, 3:24–32, 3:33–43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value" ('901 Patent claim 1)	"in response to any change occurring in the video signal inputted to the input portion" "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
"an input entered by the user" ('438 Patent claim 1)	Plain and ordinary meaning
"a cellular telephone adapted to be used in a CDMA system, comprising" ('193 Patent, all asserted claims)	The preambles are limiting

H'rg Tr. at 6:7–10, 111:19–112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of ***688** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37–64, 4:45–5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite: because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Huawei contends that the claim language contains "an obvious grammatical error that renders the term indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100–1 (Akl. Decl.) at ¶¶ 173–75, 186–188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187–90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3–11; Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited ***689** to the RAM embodiment. *Id.* (citing Docket No. 106–7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.' " *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11–12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

[39] **[40]** **[41]** The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S.Ct. at 2129–30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in

a patent by interpretation of a patent where no certification of correction has been issued ... only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)).

[42] [43] The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173–79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

***690** Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24–4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4–34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43–56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination is based on one or more inputs"	"merging / merged"

Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24–25 (citing '292 Patent 3:64–4:3, 4:36–42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64–4:3, 4:36–42; Docket

No. 95–1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

***691** Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination may be enhanced' by 'using **both** GPS and cellular signals' 'compared to ... using either ... alone.' " *Id.* (citing '292 Patent 4:1–3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17–18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18–19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344 (Fed. Cir. 2006)). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1–27:21, 29:6–30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64–4:3, 4:36–42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1–3, 3:33–59, 3:64–4:3, 4:10–35, 4:36–42. Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. *Id.* at 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2–3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] ***692** positioning means [with] the reliability of the positioning... [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13–18. The specification describes a mathematical function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64–4:3, 4:36–42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43–56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13–18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (requiring claim construction disputes to be resolved).

[44] [45] Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS/cellular positioning results combining unit 400 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. See e.g., (4:42–56), (Fig. 3 at 400); (2:12–17), (5:3–7).	**Function:** combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49–56, block 606 in Fig. 2

***693** The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result 202 has no effect on further processing.

Id. at 23–24 (citing '292 Patent 3:64–4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95–1 (Braasch Decl.) ¶¶ 50–51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64–4:3, 4:36–42).

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50–51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16–21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49–56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36–41 of 4:36–56 is not structure for the combiner; 4:42–56 is subsumed by Figure 3; 3:64–4:3 (same); 3:12–17 (inputs and outputs, not structure); 5:3–7 (same)); and citing Akl Decl. at ¶¶ 157–68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history

clearly links or associates that structure to the function recited in the claim." *Medtronic Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed ***694** function. '292 Patent 4:43–56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64–4:3, 4:36–42, 4:49–56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49–50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc.*, 248 F.3d at 1311. The structure adopted below is the corresponding disclosed structure.

[46] The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12–17, 3:64–4:3, 4:36–56, or equivalents thereof.

8. "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result. **Structure:** A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding sections in the specification as provided herein, or equivalents thereof. See, e.g., (1:20–27), (3:30–31), block 604 in Fig. 2), (4:4–16), (2:66–3:6), (5:3–7).	**Function:** : (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular-based position result. **Structure:** position calculation unit 301 cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which render the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

***695** As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4–16; *see also* '292 Patent 2:66–3:6 (describing receiver operations); '292 Patent 1:23–23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21–22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26–28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[ ] the receive operations" of baseband signal modulation, synchronization acquisition, and reception

timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46–48, '292 Patent 3:24–32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result L_{cell}'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block ('Calculate positioning result L_{cell}'). Docket No. 100 at 22 (citing '292 Patent Figures 1–2, 3:4–11, 4:10–15; Akl Decl. at ¶¶ 131–35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus*, 700 F.3d at 519–20). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated-or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, " 'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132–37). Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's ***696** briefing on a motion to dismiss under section 101. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions ... [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3–4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4–16, 2:66–3:6, 1:24–29, Braasch Decl. at ¶¶ 46–48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) that performs cellular position calculation processes as described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4–16, 2:66–3:6, 1:24–29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11–13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4–16 and 2:66–3:6. However, the specification does disclose in the passage at 1:24–29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48–2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14–17, 46:18–23.

[47] Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23–27, 4:4–16, 2:66–3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1)

***697**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure:** A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithms set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding sections in the specification as provided herein, or equivalents thereof. (See e.g., '292 Pat. 6:8; block 602 in Fig. 2; 5:58–6:15; 6:3–7).	**Function:** calculating GPS positioning reliability based on the GPS-based position result **Structure:** GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used....
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205....

Docket No. 95 at 18 (citing '292 Patent 3:44–4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize that these processing steps will be executed by a processor. *Id.* Maxell ***698** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS-and cellular-position estimates depending on the reliability for each position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12–17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites ... and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60–65, 3:44–4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22–34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19–20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012); *ePlus*, 700 F.3d at 519–20; Akl Dec. ¶¶ 102–10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112–13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus*, 700 F.3d at 518).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44–4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6–11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations ***699** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49–53, 3:60–63, 4:27–34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60–65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for GPS 201....

'292 Patent 3:44–47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites... and the received signal quality of the signals from the GPS satellites." '292 Patent 3:38–42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50–59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

[48] Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60–65, 3:38–4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1)

***700**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure:** A cellular reliability calculation unit 304 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (Block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. (See e.g., '292 Patent 3:6–11, 4:6–8, 605 in Fig. 2, 4:15–42), (Dkt. 311, ¶ 2–7).	**Function:** calculating cellular positioning reliability based on the cellular-based position result **Structure:** cellular reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, rendering the term indefinite

The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22–23 (quoting '292 Patent 3:6–11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for L_{cell} 605 using the number of cellular base stations used in calculating L_{cell} and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6–10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning results combining unit 400.

'292 Patent 4:22–27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations ... and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18–20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31–35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

[49] The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

***701 Structure**: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate cellular positioning reliability, as disclosed at 3:6–10, 4:15–42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures and which have

pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

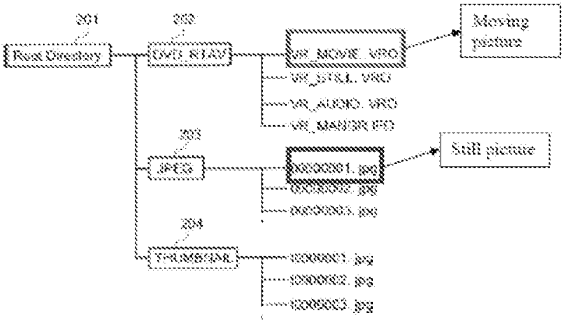
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41–11:14, 11:31–12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

***702** Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method...." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10–11. Maxell points to Figure 2 and Figure 4 as showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id.(citing '440 Patent Figure 4 (emphasis added), 10:49–51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61–63 ("if no fine still picture signal is output ... the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine still pictures and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2–8 (citing '440 Patent 11:15–18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

***703** In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11–12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving

picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003)). Huawei contends that the '440 Patent describes the "present invention" as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50–59, 2:59–3:20, 4:52–60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3–8 (first embodiment), 9:36–42 (second embodiment), 12:38–41 (third embodiment), 13:58–62 (fourth embodiment)).

Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100–19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-picture-only player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100–19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13–14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61–63).

At the oral hearing, Huawei further pointed to the file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1–8 as:

***704**

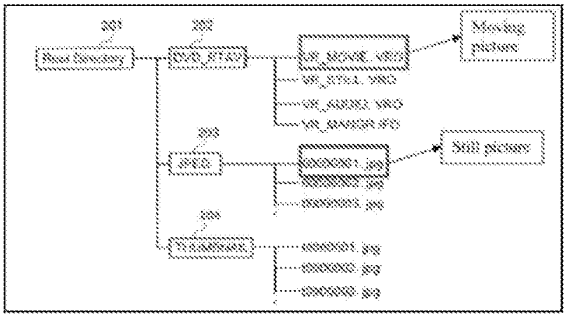
Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1-8, and Anderson, as follows.

Claims 1-8	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
First picture	X (no disclosure)
Second picture	Thumbnail and Screennail

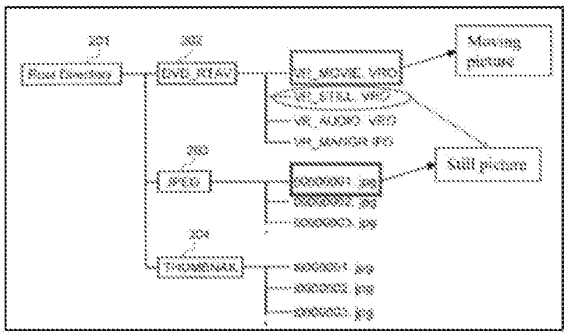
It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

Docket No. 119–3at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2–74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



***705** Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file ... as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under the JPEG directory 203 ....' " *Id.* (quoting '440 Patent 11:2–8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14–15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1315 (Fed. Cir. 2010)). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12–71:3 (citing '440 Patent 2:5–11, 2:12–17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 106 at 2 (citing Docket No. 106–1 at 15:12–13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106–2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106–3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106–4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106–5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations ***706** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[50] Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal

is output." *Id.* at 12:51–64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100–19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See Phillips*, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures ***707** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims 1–8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.' " Docket No. 119–3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See Phillips*, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also Athletic Alternatives, Inc.*, 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

[51] The Court construes the term "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 **Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15**)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures, including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5–7, 8:9–11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14–15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method *and* a still picture encoding method. Docket No. 100 at 15. According to ***708** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by..." term to assert that encoding a still picture using both a still picture encoding

method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second encoding method and other still pictures encoded by the first encoding method from single frame signals ...

Id. at 16 (citing '760 Patent 2:50–57; 2:58–3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5–12 (same), 4:51–59 (same), 4:60–67 (same), 5:4–13 (same), 5:14–20 (same), 5:24–30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:

Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1 and 2, and Anderson, as follows.

Claims 1 and 2	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
A picture	Thumbnail
X (no disclosure)	Screennail

It is clear that Anderson doesn't disclose Applicant's "first still picture"

Id.(citing Docket No. 100–23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports ***709** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100–23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[52] As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and "second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100–23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips*, 415 F.3d at 1317. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Such is the case here, with statements that do not overcome the claim's clear reference to merely "first" and "second" encoding methods.

[53] Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58–2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

***710** '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5–61, 7:1–8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster"

('517 Patent claim 1)

Maxell's Proposed Construction[1]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Physical interface selection unit 104, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding text/figures in the specification as provided herein, or equivalents thereof. See e.g., ('517 Patent 3:5–27, 3:50–61, 7:9–58, 8:48–9:19, 9:37–67, 10:52–11:23, 12:21–13:21, and 13:5–14:6.	**Function:** selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability, determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time** until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9 which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

[**Editor's Note:** The preceding image ***711** contains the reference for footnote[3]]

The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33–39, 3:50–61, 4:41–50 and Docket No. 100–2 (Wells Decl.) ¶ 43, *Noah Systems*, 675 F.3d at 1317 and *ePlus*, 700 F.3d at 519–20).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving

speed at all in determining how long to wait before switching even though claim 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407–1) but does not vary the wait time before switching. *Id.* at 27–28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface when it becomes unavailable. *Id.* (citing '517 Patent 6:62–7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62–7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5–10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing ***712** '517 Patent 3:23–31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3–60, 5:25–46, 8:1–9, 8:53–67, Docket No. 106–6 (Caloyannides Decl. B) ¶¶ 27–28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25–28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62–7:8). Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32–68). Maxell contends this is because of different "Rest–State" and "Moving–State" priorities identified in Figure 4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58–9:18, 9:54–10:9).

Maxell contends that the specification provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the

claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. § 112 ¶ 6 is not disclosed. *See WMS Gaming Inc.*, 184 F.3d at 1349; *Aristocrat Techs.*, 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block ***713** S407), Figure 9 (block S910), 5:3–14; 6:28–35, 6:45–52, 6:53–62, 9:5–18, 9:54–10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather high speed versus low speed movement. H'rg Tr. at 96:2–14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45–67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3–14 and 9:5–18. *Id.* at 92:12–94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64–5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2–18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62–7:8. This disclosure does not describe different wait times based on determining the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d at 1349.

[54] Accordingly, the Court construes the "selection switching determination unit for ..." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1)

***714**

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66–7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26–27. Maxell also relies on the "may be set" language to counter Huawei's argument that the time is always set in advance. Docket No. 106 at 6. As to the

reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62–7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24–25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58–64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally ***715** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100–24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing '517 Patent 6:66–7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62–7:8). Huawei contends that "may" only means that the fixed time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62–7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23–84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

[55] The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches ***716** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1–24, 3:58–4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: determine whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure:** an image sensor, a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents thereof	This term is written as a means-plus-function element **Function:** for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure:** Electromagnetic induction systems, electrostatic coupling systems, and Optical systems, listed in Table 1; "image sensor" ('443 '443 "camera" (Figs. 3A and 3D)

The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2–6; 4:19–23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42–46). Maxell further ***717** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26–27), "pressure sensitive resistance system tablet" ('443 Patent at 11:27–28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28–29), and several others. Docket No. 95 at 7–8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34–36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices ..." ('443 Patent at 11:36–40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance

system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> {a)} a detecting means for detecting whether {an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user} a user-associated medium at least approaches {or comes in contact with a whole of or} at least a part of a housing of {the} said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car that is running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723** **Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

***724**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an equal number of vertically arranged pixel lines" (claim 59) See also 4:66-5:8, 7:58-8:22; 15:28, 35]

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

***725**

'893 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 **Patent claim 1)**

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"an amount of instability caused by vertical and/or horizontal movement of the electric camera"	indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television set/set" (3:22–23) or other screen compatible with NTSC or PAL format (1:35–36; 10:39–41)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

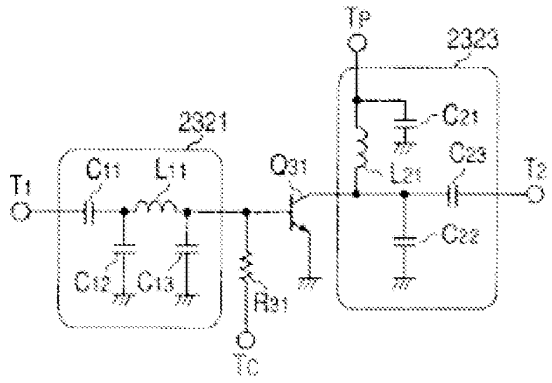
28. "variable amplitude amplifier" **('193 Patent claims 1 and 7)**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"Hardware, software, or a combination of the two that sometimes powers and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element relevant to but governed by, and indefinite under, 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** "At least one processor, such as a CPU" programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1-S9), Fig. 5 (including steps S3, S3-1-S3-4) and corresponding citations in the specification at 5:65–6:4, 6:30–7:54, 9:15–18, 9:28–48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read-only memory to said second memory, as reference, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" **Structure:** claim 1: "a control CPU (FIG 1) connected via a bus between a read only memory and the first memory, running the algorithm of Figs. 4 and 5, for [S1–S7] as

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
>
> z

Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	Indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 Patent claims 1 and 4)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: an external CPU (FIG. 3) connected via a bus between a read only memory and the memory, running the algorithm of Figs. 4 and 5. (6:30-7:54)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

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Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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297 F.Supp.3d 668
United States District Court,
E.D. Texas, Texarkana Division.

MAXELL LTD., Plaintiff,
v.
HUAWEI DEVICE USA INC.,
Huawei Device Co., Ltd., Defendants.
Maxell Ltd., Plaintiff,
v.
ZTE Corporation, ZTE
USA Inc., Defendants.

CIVIL ACTION NO. 5:16–CV–00178–RWS,
CIVIL ACTION NO. 5:16–CV–00179–RWS
|
Signed 01/31/2018
|
Filed 03/19/2018

Synopsis

Background: Patentee filed suits against alleged infringers of patents related to wireless communication systems, techniques for determining position of device, method for reproducing recorded moving and still pictures, machine-readable recording medium having moving and still pictures recorded thereon, power management, navigation systems, electric cameras, cellular telephones, and audio decoding. Suits were consolidated.

Holdings: The District Court, Robert W. Schroeder III, J., held that:

[1] patent claim terms were construed, and

[2] claim in patent relating to wireless communication systems was not invalid for indefiniteness.

Ordered accordingly.

West Headnotes (75)

[1] **Patents** ⚭ Claims as measure of patentee's rights

The claims of a patent define the invention to which the patentee is entitled the right to exclude.

[2] **Patents** ⚭ Intrinsic evidence in general

Patents ⚭ Multiple sources for construction

District court examines a patent's intrinsic evidence to define the patented invention's scope; "intrinsic evidence" includes the claims, the rest of the specification, and the prosecution history.

[3] **Patents** ⚭ Plain, ordinary, or customary meaning in general

Patents ⚭ State of the art

District court gives patent claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention.

[4] **Patents** ⚭ Language of claims in general

Patent claim language guides the district court's construction of claim terms.

[5] **Patents** ⚭ Context

In construing disputed terms of a patent claim, the context in which a term is used in the asserted claim can be highly instructive; other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent, and differences among claims, such as additional limitations in dependent claims, can provide further guidance.

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[6] **Patents** ⇐ Specifications and Drawings; Written Description

Patent claims must be read in view of the specification, of which they are a part.

1 Cases that cite this headnote

[7] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed claim term.

[8] **Patents** ⇐ Specification disclaimer

Patents ⇐ Contemporaneous construction

In the specification for a patent, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope.

[9] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

Although the district court generally presumes patent claim terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer; however, the presumption does not arise when the patentee acts as his own lexicographer.

[10] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent may resolve ambiguous patent claim terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.

[11] **Patents** ⇐ Preferred embodiment in general

A patent claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.

[12] **Patents** ⇐ Preferred embodiment

Although the specification for a patent may aid the district court in interpreting the meaning of disputed language in the patent claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.

[13] **Patents** ⇐ Questions of law or fact

A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes.

[14] **Patents** ⇐ Extrinsic Evidence

Patents ⇐ Questions of law or fact

For certain patent claim terms, the district court may need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand the background science or the meaning of a term in the relevant art during the relevant time period; in cases where those subsidiary facts are in dispute, the court will need to make subsidiary factfindings about that extrinsic evidence.

[15] **Patents** ⇐ Extrinsic Evidence

Although extrinsic evidence is useful, it is less significant than the intrinsic record in determining the legally operative meaning of patent claim language.

[16] **Patents** ⇐ State of the art

Patents ⇐ Dictionaries, encyclopedias, treatises, and other reference works

Technical dictionaries and treatises may help district court understand the underlying technology and the manner in which one skilled in the art might use patent claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

[17] **Patents** ⟜ Expert and inventor testimony

Expert testimony may aid district court in understanding the underlying technology and determining the particular meaning of a patent claim term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful in construing the claims.

[18] **Patents** ⟜ Extrinsic Evidence

Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read patent claim terms.

[19] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

There are only two exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning: (1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.

[20] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

To fall within the exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the standards for finding lexicography or disavowal that trigger the exceptions are exacting.

[21] **Patents** ⟜ Contemporaneous construction

To act as his own lexicographer, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee must clearly set forth a definition of the disputed claim term and clearly express an intent to define the term.

[22] **Patents** ⟜ Contemporaneous construction

In acting as his own lexicographer, as required to fall within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's lexicography must appear with reasonable clarity, deliberateness, and precision.

[23] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

To disavow or disclaim the full scope of a claim term, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's statements in the specification or prosecution history must amount to a clear and unmistakable surrender; however, where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.

[24] **Patents** ⟜ Functions, means, and results of invention

A patent claim may be expressed using functional language. 35 U.S.C.A. § 112.

[25] **Patents** ⟜ Functions, means, and results of invention

Patents ⟜ Step-plus-function claims

For a patent claim expressed using functional language, a structure may be claimed as a means for performing a specified function, and an act

may be claimed as a step for performing a specified function. 35 U.S.C.A. § 112.

[26] **Patents** ⚭ Functions, means, and results of invention

Patents ⚭ Step-plus-function claims

There is a rebuttable presumption that the statutory provision, stating that a structure may be claimed as a means for performing a specified function and that an act may be claimed as a step for performing a specified function, applies when the patent claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms; the presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. 35 U.S.C.A. § 112.

[27] **Patents** ⚭ Functions, means, and results of invention

When it applies, the statutory provision governing means-plus-function limitations for a patent claim, limits the scope of the functional term to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof. 35 U.S.C.A. § 112.

[28] **Patents** ⚭ Functions, means, and results of invention

Construing a means-plus-function limitation for a patent claim involves multiple steps: the first step is a determination of the function of the means-plus-function limitation, and the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof. 35 U.S.C.A. § 112.

[29] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, a structure disclosed in the patent's specification is "corresponding structure" only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. 35 U.S.C.A. § 112.

1 Cases that cite this headnote

[30] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is clearly linked or associated with the recited function. 35 U.S.C.A. § 112.

[31] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the corresponding structure must include all structure that actually performs the recited function; however, incorporation of structure from the written description is not permitted beyond that necessary to perform the claimed function. 35 U.S.C.A. § 112.

[32] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation in a patent claim, for limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function; the corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. § 112.

[33] **Patents** ⚭ Ambiguity, Uncertainty, or Indefiniteness

A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. 35 U.S.C.A. § 112.

[34] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Whether a patent claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. 35 U.S.C.A. § 112.

[35] **Patents** ⇐ Weight and sufficiency

As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with the definiteness requirement must be shown by clear and convincing evidence. 35 U.S.C.A. § 112.

[36] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Patents ⇐ Questions of law or fact

Indefiniteness is a question of law and in effect part of patent claim construction.

[37] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In analyzing definiteness of patent claims, when a term of degree is used in a claim, district court must determine whether the patent provides some standard for measuring that degree; likewise, when a subjective term is used in a claim, the court must determine whether the patent's specification supplies some standard for measuring the scope of the limitation. 35 U.S.C.A. § 112.

[38] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In the context of a patent claim governed by the statutory requirements for means-plus-function limitations, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions; the disclosure is inadequate when one of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim. 35 U.S.C.A. § 112.

[39] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

The definiteness standard requires that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty; the definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable. 35 U.S.C.A. § 112.

[40] **Patents** ⇐ Correction or amendment in general

A district court can act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued only if: (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and (2) the prosecution history does not suggest a different interpretation of the claims.

[41] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

If the patent claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. 35 U.S.C.A. § 112.

[42] **Patents** ⇐ Radio and telecommunications equipment

"A storage unit in which group information generated by classifying the plurality of base stations into groups," in patent relating to

methods for selecting, from multiple base stations within wireless system, one base station for communication with terminal, meant a storage unit in which group information generated by classifying the plurality of base stations into groups is stored.

[43] **Patents** ⚙ Particular products or processes

In patent relating to wireless communication systems, claim describing "storage unit in which group information generated by classifying the plurality of base stations into groups" was not invalid for indefiniteness, although claim as drafted contained error that patentee sought to have corrected at United States Patent and Trademark Office (USPTO) via certificate of correction by adding "is stored" at end of claim term, since correction adding "is stored" at end of claim term was not subject to reasonable debate based on claim language and specification, and prosecution history did not suggest different interpretation of claim. 35 U.S.C.A. § 112.

[44] **Patents** ⚙ Radio and telecommunications equipment

"Combining," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merging.

[45] **Patents** ⚙ Radio and telecommunications equipment

"Combined," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merged.

[46] **Patents** ⚙ Radio and telecommunications equipment

"GPS or cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability.

[47] **Patents** ⚙ Radio and telecommunications equipment

"Cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result.

[48] **Patents** ⚙ Radio and telecommunications equipment

"GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating GPS positioning reliability based on the GPS-based position result.

[49] **Patents** ⚙ Radio and telecommunications equipment

"Cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating cellular positioning reliability based on the cellular-based position result.

[50] **Patents** ⚙ Specification as limiting or enlarging claims in general

Even if a patent claim limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification.

[51] **Patents** ⇐ Data processing

"Still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded," in patent relating to method for reproducing recorded moving and still pictures, had its plain and ordinary meaning.

[52] **Patents** ⇐ Rejection and Amendment of Claims; Prosecution History

The prosecution history for a patent often lacks the clarity of the specification and thus is less useful for claim construction purposes.

[53] **Patents** ⇐ Data processing

"First encoding method," in patent related to machine-readable recording medium having moving and still pictures recorded thereon, had its plain and ordinary meaning.

[54] **Patents** ⇐ Radio and telecommunications equipment

"Selection switching determination unit for," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, meant selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

[55] **Patents** ⇐ Radio and telecommunications equipment

"Waits a longer time until switching," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, had its plain and ordinary meaning.

[56] **Patents** ⇐ Electricity and Electronics

"Detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus," in patent related to techniques for conserving battery power by providing for power-saving state, meant detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus.

[57] **Patents** ⇐ Data processing

"Walking navigation," in patent related to portable terminals suitable for walking navigation, meant information to navigate a user who is walking.

[58] **Patents** ⇐ Data processing

"Said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server," in patent related to portable terminals suitable for walking navigation, meant outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server.

[59] **Patents** ⇐ Functions, means, and results of invention

Though a patent claim term that does not use "means" is presumed not to be a means-plus-function term, the term "device" may be a nonce word that is tantamount to using the word "means." 35 U.S.C.A. § 112.

[60] **Patents** ⚭ Photography; imaging and graphic arts

"Image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[61] **Patents** ⚭ Photography; imaging and graphic arts

"Image stability detector," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera.

[62] **Patents** ⚭ Photography; imaging and graphic arts

"Amount of image-instability of the camera," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant amount of instability caused by vertical and/or horizontal movement of the electric camera.

[63] **Patents** ⚭ Photography; imaging and graphic arts

"To change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability.

[64] **Patents** ⚭ Photography; imaging and graphic arts

"Display unit configured to display an image corresponding to the image signals formed by the signal processing unit," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[65] **Patents** ⚭ Preferred embodiment in general

Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.

[66] **Patents** ⚭ Radio and telecommunications equipment

"Variable amplitude amplifier," in patent related to cellular telephone with improved means for controlling transmitter output power while reducing current consumption to conserve battery life, meant amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

[67] **Patents** ⚭ Electricity and Electronics

"Function devices equipped with independent functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant equipped with independent functions.

[68] Patents ⇐ Electricity and Electronics

"Component devices for performing different functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant performing different functions.

[69] Patents ⇐ Data processing

"Controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[70] Patents ⇐ Data processing

"Controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[71] Patents ⇐ Data processing

"Demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[72] Patents ⇐ Data processing

"Controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[73] Patents ⇐ In general; utility

US Patent 5,396,443, US Patent 6,329,794, US Patent 6,408,193, US Patent 6,748,317, US Patent 6,754,440, US Patent 6,816,491, US Patent 6,856,760, US Patent 6,928,292, US Patent 7,116,438, US Patent 7,203,517, US Patent 7,671,901, US Patent 8,098,695, US Patent 8,339,493, US Patent 8,736,729. Construed.

[74] Patents ⇐ In general; utility

US Patent 6,424,795, US Patent 6,765,616, US Patent 7,295,767, US Patent 7,447,241, US Patent 7,457,529, US Patent 7,995,897, US Patent 8,057,177, US Patent 8,417,088. Cited.

[75] **Patents** ⚭ In general; utility

US Patent 7,509,139. Construed and Valid.

Go to Markman Construed Terms

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CLAIM CONSTRUCTION MEMORANDUM AND ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***677** On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, ——— L.Ed.2d ——— (2015).

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); 8,339,493 ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8–10.

APPLICABLE LAW

[1] **[2]** **[3]** "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)

(quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

***678** [4] [5] Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

[6] [7] [8] [9] "[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

[10] [11] [12] The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.' " *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

[13] [14] "A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ––– U.S. ––––, 135 S.Ct. 831, 840–41, ––– L.Ed.2d ––– (2015). For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id.* at 841. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

[15] [16] [17] [18] Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions ***679** that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

[19] [20] There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain

and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

[21] **[22]** To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

[23] To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

[24] **[25]** A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means ... for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

[26] But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional ***680** language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap–On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Personalized Media Communications, L.L.C. v. Int'l Trade Com'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (" '[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means' ")

[27] **[28]** **[29]** **[30]** **[31]** When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291,

1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

[32] For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

[33] **[34]** **[35]** **[36]** Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.' " *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, ------ U.S. ------, 134 S.Ct. 2120, 2124, 189 L.Ed.2d 37 (2014)). Whether a claim is indefinite is determined from the perspective ***681** of one of ordinary skill in the art as of the time the application for the patent was filed. *Nautilus*, 134 S.Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

[37] When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

[38] In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

Term	Agreed Construction
"at least approaches" ('443 Patent claim 1)	Plain and ordinary meaning
"simultaneously" ('292 Patent claims 1 and 2)	Plain and ordinary meaning
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising" / "A mobile communication terminal device	The preambles of claims 1 and 9 of the '517 patent are limiting.

having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising"	
***682** ('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim 1)	

"means for selecting an object displayed on said display apparatus" ('438 Patent claim 3)	**Function**: selecting an object displayed on said display apparatus **Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. *See, e.g.,* 8:57–9:13, 7:52–8:6, Fig. 2 (106).
"operate to the end" ('794 Patent claims 8 and 14)	Plain and ordinary meaning
***683** "a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed" ('491 Patent claim 9)	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed **Structure**: An antenna and equivalents
Preambles ('491 Patent claims 7–9)	The preambles of claims 7–9 are not limiting.
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences" ('491 Patent claims 1 and 2)	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a first memory" ('491 Patent claims 1, 2, and 7)	Plain and ordinary meaning
"a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning

('491 Patent claim 2)	
"from an outside"	Plain and ordinary meaning
('491 Patent claim 7)	
"an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1)	
"a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10)	
***684** "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15)	
"an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines"	Plain and ordinary meaning
('493 Patent claim 5)	
"a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5)	
"an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6)	
"an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6)	
"an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"bias condition"	"the bias voltage and/or current setting of the amplifier"

('193 Patent claims 1 and 7)	
"a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7)	
"capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1)	
"controller for controlling operation of said function devices based on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1)	
"a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9)	
Preambles	Preambles are limiting
***685** ('695 Patent, all asserted claims)	
"packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4)	
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a state display means including a display means and for displaying on said display means that said apparatus is in one of a standby state and an active state in response	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said

to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	power saving state and said non- power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display device in accordance with the procedures set forth e.g. in the specification at 4:6– 9; 4:49–55; 5:30–37; 7:7–60; 8:64– 68; Figs. 2–4 and 11–13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones ***686** of the moving pictures corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. *See, e.g.*, Figure 6 (130); 13:45–47; 13:49–51; 13:54–57; 13:62–63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43–46; 13:47–49; 13:52–55; 13:60–61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing quantities of the communication quality for each of the groups" ('139 Patent claims 1 and 11)	"group scores derived from the indication of communication quality for each base station in a group"

Docket No. 115–2at B–1–B–14.

At the oral hearing the parties also agreed to the constructions of the following terms:

***687** "GPS receiver means for receiving GPS oriented signals and generating received GPS signals" ('292 Patent claim 1)	**Function**: receiving GPS oriented signals and generating received GPS signals **Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24–32, 2:53–57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals" ('292 Patent claim 1)	**Function**: receiving cellular-oriented signals and generating received cellular signals **Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66–3:4, 4:4–9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result" ('292 Patent claim 1)	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result **Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54–57, 2:57– 60, 3:24–32, 3:33–43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value" ('901 Patent claim 1)	"in response to any change occurring in the video signal inputted to the input portion" "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
"an input entered by the user" ('438 Patent claim 1)	Plain and ordinary meaning
"a cellular telephone adapted to be used in a CDMA system, comprising" ('193 Patent, all asserted claims)	The preambles are limiting

H'rg Tr. at 6:7–10, 111:19–112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of ***688** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37–64, 4:45–5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite: because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Huawei contends that the claim language contains "an obvious grammatical error that renders the term indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100–1 (Akl. Decl.) at ¶¶ 173–75, 186–188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187–90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3–11; Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited ***689** to the RAM embodiment. *Id.* (citing Docket No. 106–7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.' " *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11–12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

[39] **[40]** **[41]** The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S.Ct. at 2129–30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in

a patent by interpretation of a patent where no certification of correction has been issued ... only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)).

[42] [43] The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173–79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

***690** Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24–4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4–34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43–56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination based on one or more inputs"	"merging / merged"

Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24–25 (citing '292 Patent 3:64–4:3, 4:36–42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64–4:3, 4:36–42; Docket

No. 95–1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

***691** Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination may be enhanced' by 'using **both** GPS and cellular signals' 'compared to ... using either ... alone.' " *Id.* (citing '292 Patent 4:1–3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17–18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18–19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344 (Fed. Cir. 2006)). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1–27:21, 29:6–30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64–4:3, 4:36–42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1–3, 3:33–59, 3:64–4:3, 4:10–35, 4:36–42. Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. *Id.* at 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2–3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] ***692** positioning means [with] the reliability of the positioning... [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13–18. The specification describes a mathematical function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64–4:3, 4:36–42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43–56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13–18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (requiring claim construction disputes to be resolved).

[44] [45] Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: Combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS/cellular positioning results combining unit 400 and its components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding text/equations in the specification as provided herein, or equivalents thereof. See e.g., (4:42–56), (Fig. 3 at 400); (3:12–17), (5:3–7).	**Function:** Combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49–56, block 606 in Fig. 2

***693** The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result 202 has no effect on further processing.

Id. at 23–24 (citing '292 Patent 3:64–4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95–1 (Braasch Decl.) ¶¶ 50–51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64–4:3, 4:36–42).

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50–51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16–21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49–56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36–41 of 4:36–56 is not structure for the combiner; 4:42–56 is subsumed by Figure 3; 3:64–4:3 (same); 3:12–17 (inputs and outputs, not structure); 5:3–7 (same)); and citing Akl Decl. at ¶¶ 157–68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history

clearly links or associates that structure to the function recited in the claim." *Medtronic Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed ***694** function. '292 Patent 4:43–56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64–4:3, 4:36–42, 4:49–56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49–50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc.*, 248 F.3d at 1311. The structure adopted below is the corresponding disclosed structure.

[46] The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12–17, 3:64–4:3, 4:36–56, or equivalents thereof.

8. "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result. **Structure:** A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding recitations in the specification as provided herein, or equivalents thereof. See, e.g., (1:20–27), (3:30–31), block 604 in Fig. 2), (4:4–16), (2:66–3:6), (5:3–7).	**Function:** (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular-based position result. **Structure:** position calculation unit 301 cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which render the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

***695** As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4–16; *see also* '292 Patent 2:66–3:6 (describing receiver operations); '292 Patent 1:23–23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21–22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26–28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[ ] the receive operations" of baseband signal modulation, synchronization acquisition, and reception

timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46–48, '292 Patent 3:24–32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result L_{cell}'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block ('Calculate positioning result L_{cell}'). Docket No. 100 at 22 (citing'292 Patent Figures 1–2, 3:4–11, 4:10–15; Akl Decl. at ¶¶ 131–35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus*, 700 F.3d at 519–20). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated-or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, " 'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132–37). Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's ***696** briefing on a motion to dismiss under section 101. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions ... [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3–4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4–16, 2:66–3:6, 1:24–29, Braasch Decl. at ¶¶ 46–48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) that performs cellular position calculation processes as described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4–16, 2:66–3:6, 1:24–29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11–13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4–16 and 2:66–3:6. However, the specification does disclose in the passage at 1:24–29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48–2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14–17, 46:18–23.

[47] Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23–27, 4:4–16, 2:66–3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1)

***697**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure:** A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithms set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding sections in the specification as provided herein, or equivalents thereof. (See e.g., 12:66–67; block 602 in Fig. 2; 5:58–6:15; 6:3–7).	**Function:** calculating GPS positioning reliability based on the GPS-based position result **Structure:** GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used....
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205....

Docket No. 95 at 18 (citing '292 Patent 3:44–4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize that these processing steps will be executed by a processor. *Id.* Maxell ***698** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS-and cellular-position estimates depending on the reliability for each position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12–17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites ... and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60–65, 3:44–4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22–34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19–20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012); *ePlus*, 700 F.3d at 519–20; Akl Dec. ¶¶ 102–10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112–13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus*, 700 F.3d at 518).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44–4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6–11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations ***699** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49–53, 3:60–63, 4:27–34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60–65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for GPS 201....

'292 Patent 3:44–47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites... and the received signal quality of the signals from the GPS satellites." '292 Patent 3:38–42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50–59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

[48] Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60–65, 3:38–4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1)

***700**

Maxell's Proposed Construction	Board's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure:** A cellular reliability calculation unit 304 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (Block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. (See e.g., '292 Patent 3:6–11, 4:15–42, 605 in Fig. 2, 4:18–20, 4:31–35, 3:11, 4:23–27).	**Function:** calculating cellular positioning reliability based on the cellular-based position result **Structure:** cellular reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22–23 (quoting '292 Patent 3:6–11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for L_{cell} 605 using the number of cellular base stations used in calculating L_{cell} and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6–10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning results combining unit 400.

'292 Patent 4:22–27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations ... and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18–20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31–35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

[49] The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

***701 Structure**: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate cellular positioning reliability, as disclosed at 3:6–10, 4:15–42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures and which have

pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

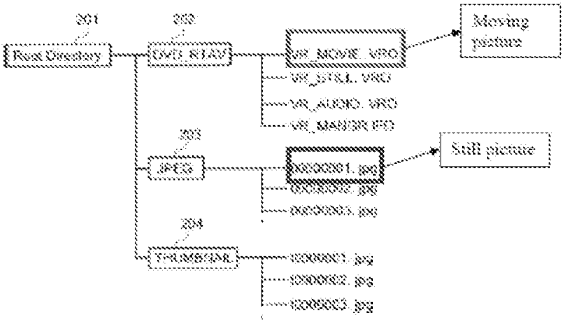
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41–11:14, 11:31–12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

***702** Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method...." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10–11. Maxell points to Figure 2 and Figure 4 as showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id.(citing '440 Patent Figure 4 (emphasis added), 10:49–51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61–63 ("if no fine still picture signal is output ... the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine still pictures and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2–8 (citing '440 Patent 11:15–18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

***703** In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11–12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving

picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003)). Huawei contends that the '440 Patent describes the "present invention" as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50–59, 2:59–3:20, 4:52–60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3–8 (first embodiment), 9:36–42 (second embodiment), 12:38–41 (third embodiment), 13:58–62 (fourth embodiment)).

Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100–19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-picture-only player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100–19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13–14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61–63).

At the oral hearing, Huawei further pointed to the file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1–8 as:

***704**

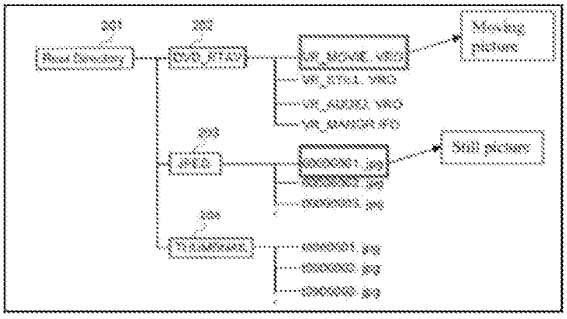
Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1-8, and Anderson, as follows.

Claims 1-8	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
First picture	X (no disclosure)
Second picture	Thumbnail and Screennail

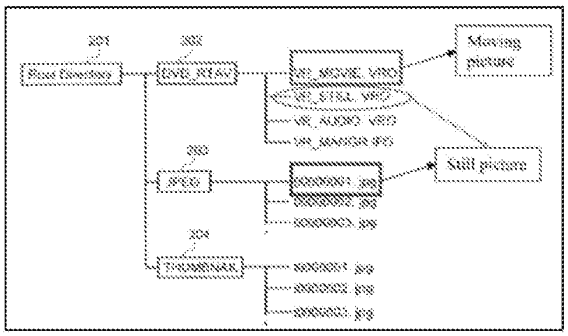
It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

Docket No. 119–3at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2–74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



***705** Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file ... as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under the JPEG directory 203 ....' " *Id.* (quoting '440 Patent 11:2–8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14–15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1315 (Fed. Cir. 2010)). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12–71:3 (citing '440 Patent 2:5–11, 2:12–17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 106 at 2 (citing Docket No. 106–1 at 15:12–13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106–2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106–3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106–4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106–5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations ***706** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[50] Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal

is output." *Id.* at 12:51–64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100–19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See Phillips*, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures ***707** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims 1–8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.' " Docket No. 119–3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See Phillips*, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also Athletic Alternatives, Inc.*, 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

[51] The Court construes the term "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 **Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15**)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures, including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5–7, 8:9–11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14–15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method *and* a still picture encoding method. Docket No. 100 at 15. According to ***708** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by..." term to assert that encoding a still picture using both a still picture encoding

method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second encoding method and other still pictures encoded by the first encoding method from single frame signals ...

Id. at 16 (citing '760 Patent 2:50–57; 2:58–3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5–12 (same), 4:51–59 (same), 4:60–67 (same), 5:4–13 (same), 5:14–20 (same), 5:24–30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:

Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares claimed Claims 1 and 2, and Anderson, as follows.

Claims 1 and 2	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
A picture	Thumbnail
X (no disclosure)	Screennail

It is clear that Anderson doesn't disclose Applicant's "first still picture"

Id.(citing Docket No. 100–23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports ***709** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100–23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[52] As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and "second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100–23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips*, 415 F.3d at 1317. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Such is the case here, with statements that do not overcome the claim's clear reference to merely "first" and "second" encoding methods.

[53] Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58–2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

***710** '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5–61, 7:1–8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster"

('517 Patent claim 1)

Maxell's Proposed Construction[3]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Physical interface selection unit 108, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding explanations in the specification as provided herein, or equivalents thereof. See e.g., ('517 Patent 3:5–27, 3:50–61, 4:5–9, 6:48–7:8, 7:32–8:7, 8:52–9:5, 10:42–11:21, and 13:5–16).	**Function:** selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability, determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time** until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9 which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

[**Editor's Note:** The preceding image ***711** contains the reference for footnote[3]]

The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33–39, 3:50–61, 4:41–50 and Docket No. 100–2 (Wells Decl.) ¶ 43, *Noah Systems*, 675 F.3d at 1317 and *ePlus*, 700 F.3d at 519–20).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving

speed at all in determining how long to wait before switching even though claim 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407–1) but does not vary the wait time before switching. *Id.* at 27–28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface when it becomes unavailable. *Id.* (citing '517 Patent 6:62–7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62–7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5–10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing ***712** '517 Patent 3:23–31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3–60, 5:25–46, 8:1–9, 8:53–67, Docket No. 106–6 (Caloyannides Decl. B) ¶¶ 27–28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25–28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62–7:8). Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32–68). Maxell contends this is because of different "Rest–State" and "Moving–State" priorities identified in Figure 4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58–9:18, 9:54–10:9).

Maxell contends that the specification provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the

claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. § 112 ¶ 6 is not disclosed. *See WMS Gaming Inc.*, 184 F.3d at 1349; *Aristocrat Techs.*, 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block ***713** S407), Figure 9 (block S910), 5:3–14; 6:28–35, 6:45–52, 6:53–62, 9:5–18, 9:54–10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather high speed versus low speed movement. H'rg Tr. at 96:2–14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45–67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3–14 and 9:5–18. *Id.* at 92:12–94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64–5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2–18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62–7:8. This disclosure does not describe different wait times based on determining the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d at 1349.

[54] Accordingly, the Court construes the "selection switching determination unit for ..." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1)

***714**

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66–7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26–27. Maxell also relies on the "may be set" language to counter Huawei's argument that the time is always set in advance. Docket No. 106 at 6. As to the

reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62–7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24–25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58–64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally ***715** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100–24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing '517 Patent 6:66–7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62–7:8). Huawei contends that "may" only means that the fixed time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62–7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23–84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

[55] The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches ***716** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1–24, 3:58–4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: determine whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure:** an image sensor, a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents thereof	This term is written as a means-plus-function element **Function:** for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure:** Electromagnetic induction systems, electrostatic coupling systems, and Optical systems, listed in Table 1; "image sensor" ('443 '443 "camera" (Figs. 34 and 35)

The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2–6; 4:19–23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42–46). Maxell further ***717** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26–27), "pressure sensitive resistance system tablet" ('443 Patent at 11:27–28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28–29), and several others. Docket No. 95 at 7–8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34–36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices ..." ('443 Patent at 11:36–40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance

system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> [(a)] a detecting means for detecting whether [an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user] a user-associated medium at least approaches [or comes in contact with a whole of or] at least a part of a housing of [the] said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car that is running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723** **Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

***724**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines" (claim 59) See also 4:66-5:6, 7:55-8:2, 8:7-22, 8:25-28, 8:51

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

***725**

'293 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1)

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"an amount of instability caused by vertical and/or horizontal movement of the electric camera"	Indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television set/set" (3:22–23) or other screen compatible with NTSC or PAL format (1:35–36; 10:39–41)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

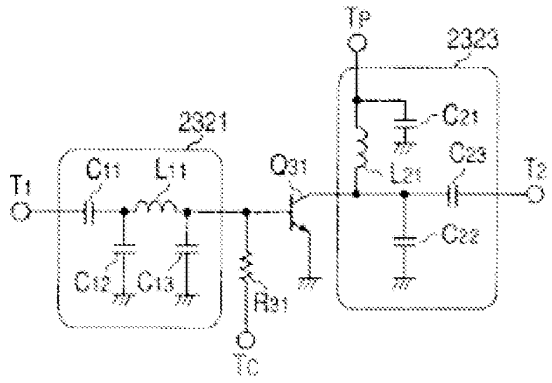
28. "variable amplitude amplifier" ('193 **Patent claims 1 and 7**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"Hardware, software, or a combination of the two that sometimes powers and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (3:29); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** At least one processor, such as a CPU, programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1, S9), Fig. 5 (including steps S3, S3-1) and corresponding citations in the specification at 3:66–4:4, 6:30–7:54, 9:15–18, 9:28–48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read-only memory to said second memory, as reference, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" **Structure:** claim 1: "a control CPU (FIG 1) connected via a bus between a read-only memory and the first memory, running the algorithm of Figs. 4 and 5, (at 3:6–7:54)

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
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Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	Indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 **Patent claims 1 and 4**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: an external CPU (FIG. 3) connected via a bus between a read only memory and the memory, running the algorithm of FIGs. 4 and 5. (6:30-7:54)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

297 F.Supp.3d 668, 2018 Markman 1527870

Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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297 F.Supp.3d 668
United States District Court,
E.D. Texas, Texarkana Division.

MAXELL LTD., Plaintiff,
v.
HUAWEI DEVICE USA INC.,
Huawei Device Co., Ltd., Defendants.
Maxell Ltd., Plaintiff,
v.
ZTE Corporation, ZTE
USA Inc., Defendants.

CIVIL ACTION NO. 5:16–CV–00178–RWS,
CIVIL ACTION NO. 5:16–CV–00179–RWS
|
Signed 01/31/2018
|
Filed 03/19/2018

Synopsis

Background: Patentee filed suits against alleged infringers of patents related to wireless communication systems, techniques for determining position of device, method for reproducing recorded moving and still pictures, machine-readable recording medium having moving and still pictures recorded thereon, power management, navigation systems, electric cameras, cellular telephones, and audio decoding. Suits were consolidated.

Holdings: The District Court, Robert W. Schroeder III, J., held that:

[1] patent claim terms were construed, and

[2] claim in patent relating to wireless communication systems was not invalid for indefiniteness.

Ordered accordingly.

West Headnotes (75)

[1] **Patents** ⚭ Claims as measure of patentee's rights

The claims of a patent define the invention to which the patentee is entitled the right to exclude.

[2] **Patents** ⚭ Intrinsic evidence in general

Patents ⚭ Multiple sources for construction

District court examines a patent's intrinsic evidence to define the patented invention's scope; "intrinsic evidence" includes the claims, the rest of the specification, and the prosecution history.

[3] **Patents** ⚭ Plain, ordinary, or customary meaning in general

Patents ⚭ State of the art

District court gives patent claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention.

[4] **Patents** ⚭ Language of claims in general

Patent claim language guides the district court's construction of claim terms.

[5] **Patents** ⚭ Context

In construing disputed terms of a patent claim, the context in which a term is used in the asserted claim can be highly instructive; other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent, and differences among claims, such as additional limitations in dependent claims, can provide further guidance.

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[6] **Patents** ⇐ Specifications and Drawings; Written Description

Patent claims must be read in view of the specification, of which they are a part.

1 Cases that cite this headnote

[7] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed claim term.

[8] **Patents** ⇐ Specification disclaimer

Patents ⇐ Contemporaneous construction

In the specification for a patent, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope.

[9] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

Although the district court generally presumes patent claim terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer; however, the presumption does not arise when the patentee acts as his own lexicographer.

[10] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent may resolve ambiguous patent claim terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.

[11] **Patents** ⇐ Preferred embodiment in general

A patent claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.

[12] **Patents** ⇐ Preferred embodiment

Although the specification for a patent may aid the district court in interpreting the meaning of disputed language in the patent claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.

[13] **Patents** ⇐ Questions of law or fact

A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes.

[14] **Patents** ⇐ Extrinsic Evidence

Patents ⇐ Questions of law or fact

For certain patent claim terms, the district court may need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand the background science or the meaning of a term in the relevant art during the relevant time period; in cases where those subsidiary facts are in dispute, the court will need to make subsidiary factfindings about that extrinsic evidence.

[15] **Patents** ⇐ Extrinsic Evidence

Although extrinsic evidence is useful, it is less significant than the intrinsic record in determining the legally operative meaning of patent claim language.

[16] **Patents** ⇐ State of the art

Patents ⇐ Dictionaries, encyclopedias, treatises, and other reference works

Technical dictionaries and treatises may help district court understand the underlying technology and the manner in which one skilled in the art might use patent claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

[17] **Patents** ⟜ Expert and inventor testimony

Expert testimony may aid district court in understanding the underlying technology and determining the particular meaning of a patent claim term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful in construing the claims.

[18] **Patents** ⟜ Extrinsic Evidence

Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read patent claim terms.

[19] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

There are only two exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning: (1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.

[20] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

To fall within the exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the standards for finding lexicography or disavowal that trigger the exceptions are exacting.

[21] **Patents** ⟜ Contemporaneous construction

To act as his own lexicographer, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee must clearly set forth a definition of the disputed claim term and clearly express an intent to define the term.

[22] **Patents** ⟜ Contemporaneous construction

In acting as his own lexicographer, as required to fall within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's lexicography must appear with reasonable clarity, deliberateness, and precision.

[23] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

To disavow or disclaim the full scope of a claim term, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's statements in the specification or prosecution history must amount to a clear and unmistakable surrender; however, where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.

[24] **Patents** ⟜ Functions, means, and results of invention

A patent claim may be expressed using functional language. 35 U.S.C.A. § 112.

[25] **Patents** ⟜ Functions, means, and results of invention

Patents ⟜ Step-plus-function claims

For a patent claim expressed using functional language, a structure may be claimed as a means for performing a specified function, and an act

may be claimed as a step for performing a specified function. 35 U.S.C.A. § 112.

[26] **Patents** ⇐ Functions, means, and results of invention

Patents ⇐ Step-plus-function claims

There is a rebuttable presumption that the statutory provision, stating that a structure may be claimed as a means for performing a specified function and that an act may be claimed as a step for performing a specified function, applies when the patent claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms; the presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. 35 U.S.C.A. § 112.

[27] **Patents** ⇐ Functions, means, and results of invention

When it applies, the statutory provision governing means-plus-function limitations for a patent claim, limits the scope of the functional term to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof. 35 U.S.C.A. § 112.

[28] **Patents** ⇐ Functions, means, and results of invention

Construing a means-plus-function limitation for a patent claim involves multiple steps: the first step is a determination of the function of the means-plus-function limitation, and the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof. 35 U.S.C.A. § 112.

[29] **Patents** ⇐ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, a structure disclosed in the patent's specification is "corresponding structure" only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. 35 U.S.C.A. § 112.

1 Cases that cite this headnote

[30] **Patents** ⇐ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is clearly linked or associated with the recited function. 35 U.S.C.A. § 112.

[31] **Patents** ⇐ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the corresponding structure must include all structure that actually performs the recited function; however, incorporation of structure from the written description is not permitted beyond that necessary to perform the claimed function. 35 U.S.C.A. § 112.

[32] **Patents** ⇐ Functions, means, and results of invention

In construing a means-plus-function limitation in a patent claim, for limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function; the corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. § 112.

[33] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. 35 U.S.C.A. § 112.

[34] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Whether a patent claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. 35 U.S.C.A. § 112.

[35] **Patents** ⇐ Weight and sufficiency

As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with the definiteness requirement must be shown by clear and convincing evidence. 35 U.S.C.A. § 112.

[36] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Patents ⇐ Questions of law or fact

Indefiniteness is a question of law and in effect part of patent claim construction.

[37] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In analyzing definiteness of patent claims, when a term of degree is used in a claim, district court must determine whether the patent provides some standard for measuring that degree; likewise, when a subjective term is used in a claim, the court must determine whether the patent's specification supplies some standard for measuring the scope of the limitation. 35 U.S.C.A. § 112.

[38] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In the context of a patent claim governed by the statutory requirements for means-plus-function limitations, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions; the disclosure is inadequate when one of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim. 35 U.S.C.A. § 112.

[39] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

The definiteness standard requires that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty; the definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable. 35 U.S.C.A. § 112.

[40] **Patents** ⇐ Correction or amendment in general

A district court can act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued only if: (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and (2) the prosecution history does not suggest a different interpretation of the claims.

[41] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

If the patent claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. 35 U.S.C.A. § 112.

[42] **Patents** ⇐ Radio and telecommunications equipment

"A storage unit in which group information generated by classifying the plurality of base stations into groups," in patent relating to

methods for selecting, from multiple base stations within wireless system, one base station for communication with terminal, meant a storage unit in which group information generated by classifying the plurality of base stations into groups is stored.

[43] **Patents** ⚙ Particular products or processes

In patent relating to wireless communication systems, claim describing "storage unit in which group information generated by classifying the plurality of base stations into groups" was not invalid for indefiniteness, although claim as drafted contained error that patentee sought to have corrected at United States Patent and Trademark Office (USPTO) via certificate of correction by adding "is stored" at end of claim term, since correction adding "is stored" at end of claim term was not subject to reasonable debate based on claim language and specification, and prosecution history did not suggest different interpretation of claim. 35 U.S.C.A. § 112.

[44] **Patents** ⚙ Radio and telecommunications equipment

"Combining," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merging.

[45] **Patents** ⚙ Radio and telecommunications equipment

"Combined," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merged.

[46] **Patents** ⚙ Radio and telecommunications equipment

"GPS or cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability.

[47] **Patents** ⚙ Radio and telecommunications equipment

"Cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result.

[48] **Patents** ⚙ Radio and telecommunications equipment

"GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating GPS positioning reliability based on the GPS-based position result.

[49] **Patents** ⚙ Radio and telecommunications equipment

"Cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating cellular positioning reliability based on the cellular-based position result.

[50] **Patents** ⚙ Specification as limiting or enlarging claims in general

Even if a patent claim limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification.

[51] **Patents** ⇐ Data processing

"Still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded," in patent relating to method for reproducing recorded moving and still pictures, had its plain and ordinary meaning.

[52] **Patents** ⇐ Rejection and Amendment of Claims; Prosecution History

The prosecution history for a patent often lacks the clarity of the specification and thus is less useful for claim construction purposes.

[53] **Patents** ⇐ Data processing

"First encoding method," in patent related to machine-readable recording medium having moving and still pictures recorded thereon, had its plain and ordinary meaning.

[54] **Patents** ⇐ Radio and telecommunications equipment

"Selection switching determination unit for," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, meant selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

[55] **Patents** ⇐ Radio and telecommunications equipment

"Waits a longer time until switching," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, had its plain and ordinary meaning.

[56] **Patents** ⇐ Electricity and Electronics

"Detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus," in patent related to techniques for conserving battery power by providing for power-saving state, meant detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus.

[57] **Patents** ⇐ Data processing

"Walking navigation," in patent related to portable terminals suitable for walking navigation, meant information to navigate a user who is walking.

[58] **Patents** ⇐ Data processing

"Said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server," in patent related to portable terminals suitable for walking navigation, meant outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server.

[59] **Patents** ⇐ Functions, means, and results of invention

Though a patent claim term that does not use "means" is presumed not to be a means-plus-function term, the term "device" may be a nonce word that is tantamount to using the word "means." 35 U.S.C.A. § 112.

[60] **Patents** ⟐ Photography; imaging and graphic arts

"Image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[61] **Patents** ⟐ Photography; imaging and graphic arts

"Image stability detector," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera.

[62] **Patents** ⟐ Photography; imaging and graphic arts

"Amount of image-instability of the camera," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant amount of instability caused by vertical and/or horizontal movement of the electric camera.

[63] **Patents** ⟐ Photography; imaging and graphic arts

"To change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability.

[64] **Patents** ⟐ Photography; imaging and graphic arts

"Display unit configured to display an image corresponding to the image signals formed by the signal processing unit," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[65] **Patents** ⟐ Preferred embodiment in general

Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.

[66] **Patents** ⟐ Radio and telecommunications equipment

"Variable amplitude amplifier," in patent related to cellular telephone with improved means for controlling transmitter output power while reducing current consumption to conserve battery life, meant amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

[67] **Patents** ⟐ Electricity and Electronics

"Function devices equipped with independent functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant equipped with independent functions.

[68] Patents ⇐ Electricity and Electronics

"Component devices for performing different functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant performing different functions.

[69] Patents ⇐ Data processing

"Controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[70] Patents ⇐ Data processing

"Controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[71] Patents ⇐ Data processing

"Demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[72] Patents ⇐ Data processing

"Controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[73] Patents ⇐ In general; utility

US Patent 5,396,443, US Patent 6,329,794, US Patent 6,408,193, US Patent 6,748,317, US Patent 6,754,440, US Patent 6,816,491, US Patent 6,856,760, US Patent 6,928,292, US Patent 7,116,438, US Patent 7,203,517, US Patent 7,671,901, US Patent 8,098,695, US Patent 8,339,493, US Patent 8,736,729. Construed.

[74] Patents ⇐ In general; utility

US Patent 6,424,795, US Patent 6,765,616, US Patent 7,295,767, US Patent 7,447,241, US Patent 7,457,529, US Patent 7,995,897, US Patent 8,057,177, US Patent 8,417,088. Cited.

[75] Patents ⚭ In general; utility

US Patent 7,509,139. Construed and Valid.

Go to Markman Construed Terms

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CLAIM CONSTRUCTION MEMORANDUM AND ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***677** On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, ——— L.Ed.2d ——— (2015).

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); 8,339,493 ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8–10.

APPLICABLE LAW

[1] [2] [3] "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)

(quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

***678** [4] [5] Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

[6] [7] [8] [9] "[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

[10] [11] [12] The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.' " *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

[13] [14] "A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, 840–41, ——— L.Ed.2d ——— (2015). For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id.* at 841. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

[15] [16] [17] [18] Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions ***679** that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

[19] [20] There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain

and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

[21] **[22]** To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

[23] To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

[24] **[25]** A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means ... for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

[26] But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional ***680** language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap–On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Personalized Media Communications, L.L.C. v. Int'l Trade Com'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (" '[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means' ")

[27] **[28]** **[29]** **[30]** **[31]** When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291,

1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

[32] For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

[33] **[34]** **[35]** **[36]** Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.' " *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, ------ U.S. ------, 134 S.Ct. 2120, 2124, 189 L.Ed.2d 37 (2014)). Whether a claim is indefinite is determined from the perspective ***681** of one of ordinary skill in the art as of the time the application for the patent was filed. *Nautilus*, 134 S.Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

[37] When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

[38] In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

Term	Agreed Construction
"at least approaches" ('443 Patent claim 1)	Plain and ordinary meaning
"simultaneously" ('292 Patent claims 1 and 2)	Plain and ordinary meaning
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising" / "A mobile communication terminal device	The preambles of claims 1 and 9 of the '517 patent are limiting.

having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising"	
***682** ('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim 1)	

"means for selecting an object displayed on said display apparatus" ('438 Patent claim 3)	**Function**: selecting an object displayed on said display apparatus **Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. *See, e.g.,* 8:57–9:13, 7:52–8:6, Fig. 2 (106).
"operate to the end" ('794 Patent claims 8 and 14)	Plain and ordinary meaning
***683** "a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed" ('491 Patent claim 9)	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed **Structure**: An antenna and equivalents
Preambles ('491 Patent claims 7–9)	The preambles of claims 7–9 are not limiting.
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences" ('491 Patent claims 1 and 2)	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a first memory" ('491 Patent claims 1, 2, and 7)	Plain and ordinary meaning
"a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning

('491 Patent claim 2)	
"from an outside"	Plain and ordinary meaning
('491 Patent claim 7)	
"an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1)	
"a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10)	
***684** "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15)	
"an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines"	Plain and ordinary meaning
('493 Patent claim 5)	
"a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5)	
"an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6)	
"an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6)	
"an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"bias condition"	"the bias voltage and/or current setting of the amplifier"

('193 Patent claims 1 and 7)	
"a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7)	
"capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1)	
"controller for controlling operation of said function devices based on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1)	
"a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9)	
Preambles	Preambles are limiting
***685** ('695 Patent, all asserted claims)	
"packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4)	
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a state display means including a display means and for displaying on said display means that said apparatus is in one of a standby state and an active state in response	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said

to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	power saving state and said non- power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display device in accordance with the procedures set forth e.g. in the specification at 4:6– 9; 4:49–55; 5:30–37; 7:7–60; 8:64– 68; Figs. 2–4 and 11–13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones ***686** of the moving pictures corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. *See, e.g.*, Figure 6 (130); 13:45–47; 13:49–51; 13:54–57; 13:62–63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43–46; 13:47–49; 13:52–55; 13:60–61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing quantities of the communication quality for each of the groups" ('139 Patent claims 1 and 11)	"group scores derived from the indication of communication quality for each base station in a group"

Docket No. 115–2at B–1–B–14.

At the oral hearing the parties also agreed to the constructions of the following terms:

***687** "GPS receiver means for receiving GPS oriented signals and generating received GPS signals" ('292 Patent claim 1)	**Function**: receiving GPS oriented signals and generating received GPS signals **Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24–32, 2:53–57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals" ('292 Patent claim 1)	**Function**: receiving cellular-oriented signals and generating received cellular signals **Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66–3:4, 4:4–9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result" ('292 Patent claim 1)	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result **Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54–57, 2:57– 60, 3:24–32, 3:33–43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value" ('901 Patent claim 1)	"in response to any change occurring in the video signal inputted to the input portion" "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
"an input entered by the user" ('438 Patent claim 1)	Plain and ordinary meaning
"a cellular telephone adapted to be used in a CDMA system, comprising" ('193 Patent, all asserted claims)	The preambles are limiting

H'rg Tr. at 6:7–10, 111:19–112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of ***688** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37–64, 4:45–5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite: because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Huawei contends that the claim language contains "an obvious grammatical error that renders the term indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100–1 (Akl. Decl.) at ¶¶ 173–75, 186–188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187–90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3–11; Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited ***689** to the RAM embodiment. *Id.* (citing Docket No. 106–7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.' " *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11–12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

[39] **[40]** **[41]** The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S.Ct. at 2129–30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in

a patent by interpretation of a patent where no certification of correction has been issued ... only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)).

[42] [43] The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173–79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

***690** Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24–4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4–34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43–56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination based on one or more inputs"	"merging" / "merged"

Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24–25 (citing '292 Patent 3:64–4:3, 4:36–42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64–4:3, 4:36–42; Docket

No. 95–1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

***691** Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination may be enhanced' by 'using **both** GPS and cellular signals' 'compared to ... using either ... alone.' " *Id.* (citing '292 Patent 4:1–3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17–18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18–19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344 (Fed. Cir. 2006)). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1–27:21, 29:6–30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64–4:3, 4:36–42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1–3, 3:33–59, 3:64–4:3, 4:10–35, 4:36–42. Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. *Id.* at 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2–3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] ***692** positioning means [with] the reliability of the positioning... [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13–18. The specification describes a mathematical function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64–4:3, 4:36–42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43–56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13–18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (requiring claim construction disputes to be resolved).

[44] [45] Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS/cellular positioning results combining unit 400 and its components within a mobile handset that performs processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. See e.g., (4:42–56), (Fig. 3 at 400); (3:12–17), (5:3–7).	**Function:** combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49–56, block 606 in Fig. 2

***693** The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result 202 has no effect on further processing.

Id. at 23–24 (citing '292 Patent 3:64–4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95–1 (Braasch Decl.) ¶¶ 50–51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64–4:3, 4:36–42).

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50–51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16–21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49–56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36–41 of 4:36–56 is not structure for the combiner; 4:42–56 is subsumed by Figure 3; 3:64–4:3 (same); 3:12–17 (inputs and outputs, not structure); 5:3–7 (same)); and citing Akl Decl. at ¶¶ 157–68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history

clearly links or associates that structure to the function recited in the claim." *Medtronic Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed ***694** function. '292 Patent 4:43–56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64–4:3, 4:36–42, 4:49–56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49–50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc.*, 248 F.3d at 1311. The structure adopted below is the corresponding disclosed structure.

[46] The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12–17, 3:64–4:3, 4:36–56, or equivalents thereof.

8. "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result. **Structure:** A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding sections in the specification as provided herein, or equivalents thereof. See, e.g., (1:20–27), (3:30–31), block 604 in Fig. 2), (4:4–16), (2:66–3:6), (5:3–7).	**Function:** : (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular-based position result. **Structure:** position calculation unit 301 cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

***695** As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4–16; *see also* '292 Patent 2:66–3:6 (describing receiver operations); '292 Patent 1:23–23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21–22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26–28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[ ] the receive operations" of baseband signal modulation, synchronization acquisition, and reception

timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46–48, '292 Patent 3:24–32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result L_{cell}'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block ('Calculate positioning result L_{cell}'). Docket No. 100 at 22 (citing'292 Patent Figures 1–2, 3:4–11, 4:10–15; Akl Decl. at ¶¶ 131–35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus*, 700 F.3d at 519–20). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated-or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, " 'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132–37). Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's ***696** briefing on a motion to dismiss under section 101. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions ... [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3–4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4–16, 2:66–3:6, 1:24–29, Braasch Decl. at ¶¶ 46–48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) that performs cellular position calculation processes as described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4–16, 2:66–3:6, 1:24–29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11–13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4–16 and 2:66–3:6. However, the specification does disclose in the passage at 1:24–29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48–2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14–17, 46:18–23.

[47] Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23–27, 4:4–16, 2:66–3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1)

***697**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure:** A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding sections in the specification as provided herein, or equivalents thereof. (See e.g., '292 Pat. 6:8; block 602 in Fig. 2; 5:58–6:15; 6:3–7).	**Function:** calculating GPS positioning reliability based on the GPS-based position result **Structure:** GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used....
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205....

Docket No. 95 at 18 (citing '292 Patent 3:44–4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize that these processing steps will be executed by a processor. *Id.* Maxell ***698** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS-and cellular-position estimates depending on the reliability for each position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12–17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites ... and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60–65, 3:44–4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22–34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19–20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012); *ePlus*, 700 F.3d at 519–20; Akl Dec. ¶¶ 102–10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112–13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus*, 700 F.3d at 518).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44–4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6–11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations ***699** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49–53, 3:60–63, 4:27–34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60–65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for GPS 201....

'292 Patent 3:44–47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites... and the received signal quality of the signals from the GPS satellites." '292 Patent 3:38–42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50–59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

[48] Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60–65, 3:38–4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1)

***700**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure:** A cellular reliability calculation unit 304 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (Block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. (See e.g., '292 Patent 3:6–11, 4:6–8, 605 in Fig. 2, 4:15–42, 6:9–11, 15:3–7).	**Function:** calculating cellular positioning reliability based on the cellular-based position result **Structure:** cellular reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, rendering the term indefinite

The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22–23 (quoting '292 Patent 3:6–11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for L_{cell} 605 using the number of cellular base stations used in calculating L_{cell} and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6–10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning results combining unit 400.

'292 Patent 4:22–27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations ... and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18–20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31–35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

[49] The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

***701 Structure**: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate cellular positioning reliability, as disclosed at 3:6–10, 4:15–42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures and which have

pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

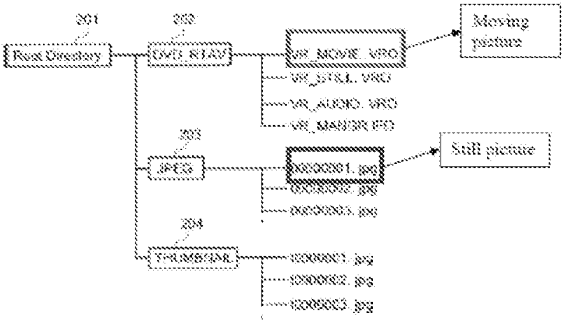
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41–11:14, 11:31–12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

***702** Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method...." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10–11. Maxell points to Figure 2 and Figure 4 as showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id.(citing '440 Patent Figure 4 (emphasis added), 10:49–51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61–63 ("if no fine still picture signal is output ... the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine still pictures and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2–8 (citing '440 Patent 11:15–18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

***703** In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11–12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving

picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003)). Huawei contends that the '440 Patent describes the "present invention" as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50–59, 2:59–3:20, 4:52–60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3–8 (first embodiment), 9:36–42 (second embodiment), 12:38–41 (third embodiment), 13:58–62 (fourth embodiment)).

Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100–19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-picture-only player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100–19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13–14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61–63).

At the oral hearing, Huawei further pointed to the file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1–8 as:

***704**

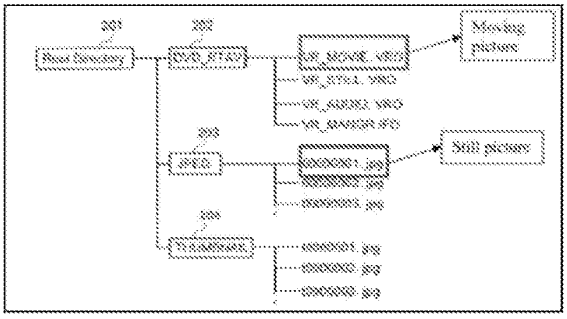
Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1-8, and Anderson, as follows.

Claims 1-8	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
First picture	X (no disclosure)
Second picture	Thumbnail and Screennail

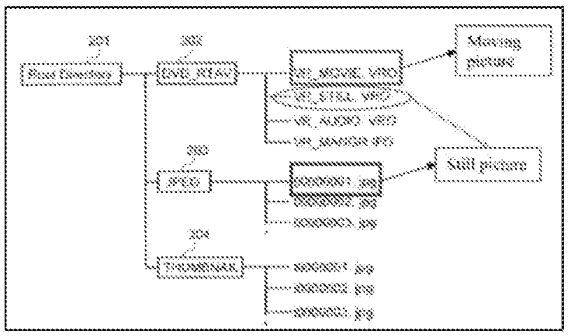
It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

Docket No. 119–3at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2–74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



***705** Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file ... as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under the JPEG directory 203 ....' " *Id.* (quoting '440 Patent 11:2–8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14–15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1315 (Fed. Cir. 2010)). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12–71:3 (citing '440 Patent 2:5–11, 2:12–17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 106 at 2 (citing Docket No. 106–1 at 15:12–13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106–2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106–3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106–4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106–5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations ***706** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[50] Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal

is output." *Id.* at 12:51–64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100–19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See Phillips*, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures ***707** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims 1–8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.' " Docket No. 119–3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See Phillips*, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also Athletic Alternatives, Inc.*, 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

[51] The Court construes the term "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 **Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15**)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures, including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5–7, 8:9–11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14–15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method *and* a still picture encoding method. Docket No. 100 at 15. According to ***708** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by..." term to assert that encoding a still picture using both a still picture encoding

method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second encoding method and other still pictures encoded by the first encoding method from single frame signals ...

Id. at 16 (citing '760 Patent 2:50–57; 2:58–3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5–12 (same), 4:51–59 (same), 4:60–67 (same), 5:4–13 (same), 5:14–20 (same), 5:24–30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:

Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares claimed Claims 1 and 2, and Anderson, as follows.

Claims 1 and 2	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
A picture	Thumbnail
X (no disclosure)	Screennail

It is clear that Anderson doesn't disclose Applicant's "first still picture"

Id.(citing Docket No. 100–23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports ***709** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100–23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[52] As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and "second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100–23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips*, 415 F.3d at 1317. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Such is the case here, with statements that do not overcome the claim's clear reference to merely "first" and "second" encoding methods.

[53] Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58–2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

***710** '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5–61, 7:1–8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster"

('517 Patent claim 1)

Maxell's Proposed Construction[1]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Physical interface selection unit 104, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding explanations in the specification as provided herein, or equivalents thereof. See e.g., (9:35–39); (3:27–30); (3:39–4:48); (9:30–67); (8:52–9:5); (9:42–10:21); and (3:5–16).	**Function:** selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability, determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time** until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9 which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

[**Editor's Note:** The preceding image ***711** contains the reference for footnote[3]]

The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33–39, 3:50–61, 4:41–50 and Docket No. 100–2 (Wells Decl.) ¶ 43, *Noah Systems*, 675 F.3d at 1317 and *ePlus*, 700 F.3d at 519–20).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving

speed at all in determining how long to wait before switching even though claim 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407–1) but does not vary the wait time before switching. *Id.* at 27–28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface when it becomes unavailable. *Id.* (citing '517 Patent 6:62–7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62–7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5–10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing ***712** '517 Patent 3:23–31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3–60, 5:25–46, 8:1–9, 8:53–67, Docket No. 106–6 (Caloyannides Decl. B) ¶¶ 27–28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25–28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62–7:8). Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32–68). Maxell contends this is because of different "Rest–State" and "Moving–State" priorities identified in Figure 4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58–9:18, 9:54–10:9).

Maxell contends that the specification provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the

claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. § 112 ¶ 6 is not disclosed. *See WMS Gaming Inc.*, 184 F.3d at 1349; *Aristocrat Techs.*, 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block ***713** S407), Figure 9 (block S910), 5:3–14; 6:28–35, 6:45–52, 6:53–62, 9:5–18, 9:54–10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather high speed versus low speed movement. H'rg Tr. at 96:2–14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45–67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3–14 and 9:5–18. *Id.* at 92:12–94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64–5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2–18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62–7:8. This disclosure does not describe different wait times based on determining the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d at 1349.

[54] Accordingly, the Court construes the "selection switching determination unit for ..." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1)

***714**

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66–7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26–27. Maxell also relies on the "may be set" language to counter Huawei's argument that the time is always set in advance. Docket No. 106 at 6. As to the

reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62–7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24–25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58–64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally ***715** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100–24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing '517 Patent 6:66–7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62–7:8). Huawei contends that "may" only means that the fixed time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62–7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23–84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

[55] The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches ***716** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1–24, 3:58–4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: detecting whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure:** "a sensor," a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents thereof.	This term is written as a means-plus-function element. **Function:** for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure:** Electromagnetic induction systems, electrostatic coupling systems, and Optical systems, listed in Table 1; "image sensor" ('443 '443 "microphone" ('443 "temperature sensor" ('443 "cameras" (Figs. 3A and 3D)

The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2–6; 4:19–23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42–46). Maxell further ***717** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26–27), "pressure sensitive resistance system tablet" ('443 Patent at 11:27–28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28–29), and several others. Docket No. 95 at 7–8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34–36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices ..." ('443 Patent at 11:36–40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance

system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> {a)} a detecting means for detecting whether {an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user} a user-associated medium at least approaches {or comes in contact with a whole of or} at least a part of a housing of {the} said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car that is running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723** **Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

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Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an equal number of vertically arranged pixel lines" (claim 59) See also 4:66-5:6, 7:35-8:6, 8:17-22, 8:25-28, 8:51

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

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'293 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1)

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"the amount of instability caused by vertical and/or horizontal movement of the electric camera"	Indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television monitor" (1:32–33) or other screen compatible with NTSC or PAL format (1:35–36; 10:39–41)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

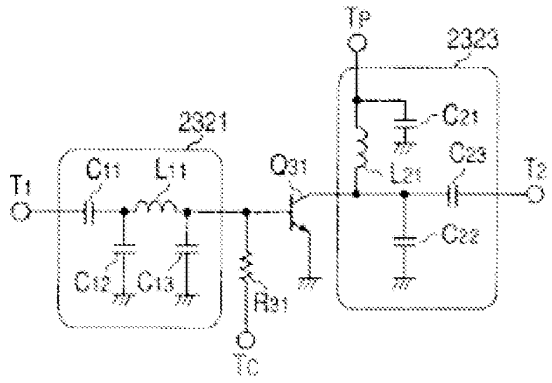
28. "variable amplitude amplifier" ('193 **Patent claims 1 and 7**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"hardware, software, or a combination of the two that consumes power and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** At least one processor, such as a CPU, programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1-S3-8), Fig. 5 (including steps S5, S5-1-S5-4) and corresponding citations in the specification at 5:65–6:4, 6:30–7:54, 9:15–18, 9:28–48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read-only memory to said second memory, as reference, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" **Structure:** claim 1: "a control CPU (FIG 1) connected via a bus between a read-only memory and the first memory, running the algorithm of Figs. 4 and 5, for [S1–S7] as

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
>
> z

Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 Patent claims 1 and 4)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: as claimed ('695 Patent at 23:3) connected to and between a read only memory and the memory, running the algorithm of Figs. 4 and 5. (6:30–7:54)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

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Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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297 F.Supp.3d 668
United States District Court,
E.D. Texas, Texarkana Division.

MAXELL LTD., Plaintiff,
v.
HUAWEI DEVICE USA INC.,
Huawei Device Co., Ltd., Defendants.
Maxell Ltd., Plaintiff,
v.
ZTE Corporation, ZTE
USA Inc., Defendants.

CIVIL ACTION NO. 5:16–CV–00178–RWS,
CIVIL ACTION NO. 5:16–CV–00179–RWS
|
Signed 01/31/2018
|
Filed 03/19/2018

Synopsis
Background: Patentee filed suits against alleged infringers of patents related to wireless communication systems, techniques for determining position of device, method for reproducing recorded moving and still pictures, machine-readable recording medium having moving and still pictures recorded thereon, power management, navigation systems, electric cameras, cellular telephones, and audio decoding. Suits were consolidated.

Holdings: The District Court, Robert W. Schroeder III, J., held that:

[1] patent claim terms were construed, and

[2] claim in patent relating to wireless communication systems was not invalid for indefiniteness.

Ordered accordingly.

West Headnotes (75)

[1] **Patents** ⚭ Claims as measure of patentee's rights

The claims of a patent define the invention to which the patentee is entitled the right to exclude.

[2] **Patents** ⚭ Intrinsic evidence in general
Patents ⚭ Multiple sources for construction

District court examines a patent's intrinsic evidence to define the patented invention's scope; "intrinsic evidence" includes the claims, the rest of the specification, and the prosecution history.

[3] **Patents** ⚭ Plain, ordinary, or customary meaning in general
Patents ⚭ State of the art

District court gives patent claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention.

[4] **Patents** ⚭ Language of claims in general

Patent claim language guides the district court's construction of claim terms.

[5] **Patents** ⚭ Context

In construing disputed terms of a patent claim, the context in which a term is used in the asserted claim can be highly instructive; other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent, and differences among claims, such as additional limitations in dependent claims, can provide further guidance.

[6] **Patents** ⇐ Specifications and Drawings; Written Description

Patent claims must be read in view of the specification, of which they are a part.

1 Cases that cite this headnote

[7] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed claim term.

[8] **Patents** ⇐ Specification disclaimer

Patents ⇐ Contemporaneous construction

In the specification for a patent, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope.

[9] **Patents** ⇐ Specification disclaimer

Patents ⇐ Prosecution disclaimer

Patents ⇐ Contemporaneous construction

Although the district court generally presumes patent claim terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer; however, the presumption does not arise when the patentee acts as his own lexicographer.

[10] **Patents** ⇐ Specifications and Drawings; Written Description

The specification for a patent may resolve ambiguous patent claim terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.

[11] **Patents** ⇐ Preferred embodiment in general

A patent claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.

[12] **Patents** ⇐ Preferred embodiment

Although the specification for a patent may aid the district court in interpreting the meaning of disputed language in the patent claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.

[13] **Patents** ⇐ Questions of law or fact

A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes.

[14] **Patents** ⇐ Extrinsic Evidence

Patents ⇐ Questions of law or fact

For certain patent claim terms, the district court may need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand the background science or the meaning of a term in the relevant art during the relevant time period; in cases where those subsidiary facts are in dispute, the court will need to make subsidiary factfindings about that extrinsic evidence.

[15] **Patents** ⇐ Extrinsic Evidence

Although extrinsic evidence is useful, it is less significant than the intrinsic record in determining the legally operative meaning of patent claim language.

[16] **Patents** ⇐ State of the art

Patents ⇐ Dictionaries, encyclopedias, treatises, and other reference works

Technical dictionaries and treatises may help district court understand the underlying technology and the manner in which one skilled in the art might use patent claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

[17] **Patents** ⟜ Expert and inventor testimony

Expert testimony may aid district court in understanding the underlying technology and determining the particular meaning of a patent claim term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful in construing the claims.

[18] **Patents** ⟜ Extrinsic Evidence

Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read patent claim terms.

[19] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

There are only two exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning: (1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.

[20] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

Patents ⟜ Contemporaneous construction

To fall within the exceptions to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the standards for finding lexicography or disavowal that trigger the exceptions are exacting.

[21] **Patents** ⟜ Contemporaneous construction

To act as his own lexicographer, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee must clearly set forth a definition of the disputed claim term and clearly express an intent to define the term.

[22] **Patents** ⟜ Contemporaneous construction

In acting as his own lexicographer, as required to fall within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's lexicography must appear with reasonable clarity, deliberateness, and precision.

[23] **Patents** ⟜ Specification disclaimer

Patents ⟜ Prosecution disclaimer

To disavow or disclaim the full scope of a claim term, thereby falling within the exception to the general rule that patent claim terms are construed according to their plain and ordinary meaning, the patentee's statements in the specification or prosecution history must amount to a clear and unmistakable surrender; however, where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.

[24] **Patents** ⟜ Functions, means, and results of invention

A patent claim may be expressed using functional language. 35 U.S.C.A. § 112.

[25] **Patents** ⟜ Functions, means, and results of invention

Patents ⟜ Step-plus-function claims

For a patent claim expressed using functional language, a structure may be claimed as a means for performing a specified function, and an act

may be claimed as a step for performing a specified function. 35 U.S.C.A. § 112.

[26] **Patents** ⚭ Functions, means, and results of invention

Patents ⚭ Step-plus-function claims

There is a rebuttable presumption that the statutory provision, stating that a structure may be claimed as a means for performing a specified function and that an act may be claimed as a step for performing a specified function, applies when the patent claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms; the presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. 35 U.S.C.A. § 112.

[27] **Patents** ⚭ Functions, means, and results of invention

When it applies, the statutory provision governing means-plus-function limitations for a patent claim, limits the scope of the functional term to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof. 35 U.S.C.A. § 112.

[28] **Patents** ⚭ Functions, means, and results of invention

Construing a means-plus-function limitation for a patent claim involves multiple steps: the first step is a determination of the function of the means-plus-function limitation, and the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof. 35 U.S.C.A. § 112.

[29] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, a structure disclosed in the patent's specification is "corresponding structure" only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. 35 U.S.C.A. § 112.

1 Cases that cite this headnote

[30] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is clearly linked or associated with the recited function. 35 U.S.C.A. § 112.

[31] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation for a patent claim, the corresponding structure must include all structure that actually performs the recited function; however, incorporation of structure from the written description is not permitted beyond that necessary to perform the claimed function. 35 U.S.C.A. § 112.

[32] **Patents** ⚭ Functions, means, and results of invention

In construing a means-plus-function limitation in a patent claim, for limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function; the corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. 35 U.S.C.A. § 112.

[33] **Patents** ⚭ Ambiguity, Uncertainty, or Indefiniteness

A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. 35 U.S.C.A. § 112.

[34] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Whether a patent claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. 35 U.S.C.A. § 112.

[35] **Patents** ⇐ Weight and sufficiency

As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with the definiteness requirement must be shown by clear and convincing evidence. 35 U.S.C.A. § 112.

[36] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

Patents ⇐ Questions of law or fact

Indefiniteness is a question of law and in effect part of patent claim construction.

[37] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In analyzing definiteness of patent claims, when a term of degree is used in a claim, district court must determine whether the patent provides some standard for measuring that degree; likewise, when a subjective term is used in a claim, the court must determine whether the patent's specification supplies some standard for measuring the scope of the limitation. 35 U.S.C.A. § 112.

[38] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

In the context of a patent claim governed by the statutory requirements for means-plus-function limitations, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions; the disclosure is inadequate when one of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim. 35 U.S.C.A. § 112.

[39] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

The definiteness standard requires that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty; the definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable. 35 U.S.C.A. § 112.

[40] **Patents** ⇐ Correction or amendment in general

A district court can act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued only if: (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and (2) the prosecution history does not suggest a different interpretation of the claims.

[41] **Patents** ⇐ Ambiguity, Uncertainty, or Indefiniteness

If the patent claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. 35 U.S.C.A. § 112.

[42] **Patents** ⇐ Radio and telecommunications equipment

"A storage unit in which group information generated by classifying the plurality of base stations into groups," in patent relating to

methods for selecting, from multiple base stations within wireless system, one base station for communication with terminal, meant a storage unit in which group information generated by classifying the plurality of base stations into groups is stored.

[43] **Patents** ⚙ Particular products or processes

In patent relating to wireless communication systems, claim describing "storage unit in which group information generated by classifying the plurality of base stations into groups" was not invalid for indefiniteness, although claim as drafted contained error that patentee sought to have corrected at United States Patent and Trademark Office (USPTO) via certificate of correction by adding "is stored" at end of claim term, since correction adding "is stored" at end of claim term was not subject to reasonable debate based on claim language and specification, and prosecution history did not suggest different interpretation of claim. 35 U.S.C.A. § 112.

[44] **Patents** ⚙ Radio and telecommunications equipment

"Combining," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merging.

[45] **Patents** ⚙ Radio and telecommunications equipment

"Combined," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant merged.

[46] **Patents** ⚙ Radio and telecommunications equipment

"GPS or cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability.

[47] **Patents** ⚙ Radio and telecommunications equipment

"Cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result.

[48] **Patents** ⚙ Radio and telecommunications equipment

"GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating GPS positioning reliability based on the GPS-based position result.

[49] **Patents** ⚙ Radio and telecommunications equipment

"Cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result," in patent relating to method for determining position of mobile handset using both GPS and cellular signals, meant calculating cellular positioning reliability based on the cellular-based position result.

[50] **Patents** ⚙ Specification as limiting or enlarging claims in general

Even if a patent claim limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification.

[51] **Patents** ⇐ Data processing

"Still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded," in patent relating to method for reproducing recorded moving and still pictures, had its plain and ordinary meaning.

[52] **Patents** ⇐ Rejection and Amendment of Claims; Prosecution History

The prosecution history for a patent often lacks the clarity of the specification and thus is less useful for claim construction purposes.

[53] **Patents** ⇐ Data processing

"First encoding method," in patent related to machine-readable recording medium having moving and still pictures recorded thereon, had its plain and ordinary meaning.

[54] **Patents** ⇐ Radio and telecommunications equipment

"Selection switching determination unit for," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, meant selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

[55] **Patents** ⇐ Radio and telecommunications equipment

"Waits a longer time until switching," in patent related to mobile device capable of automatically selecting physical interface for communication based on communication availability of physical interface, device moving speed, and position of mobile device, had its plain and ordinary meaning.

[56] **Patents** ⇐ Electricity and Electronics

"Detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus," in patent related to techniques for conserving battery power by providing for power-saving state, meant detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus.

[57] **Patents** ⇐ Data processing

"Walking navigation," in patent related to portable terminals suitable for walking navigation, meant information to navigate a user who is walking.

[58] **Patents** ⇐ Data processing

"Said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server," in patent related to portable terminals suitable for walking navigation, meant outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server.

[59] **Patents** ⇐ Functions, means, and results of invention

Though a patent claim term that does not use "means" is presumed not to be a means-plus-function term, the term "device" may be a nonce word that is tantamount to using the word "means." 35 U.S.C.A. § 112.

[60] **Patents** ⚭ Photography; imaging and graphic arts

"Image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[61] **Patents** ⚭ Photography; imaging and graphic arts

"Image stability detector," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera.

[62] **Patents** ⚭ Photography; imaging and graphic arts

"Amount of image-instability of the camera," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant amount of instability caused by vertical and/or horizontal movement of the electric camera.

[63] **Patents** ⚭ Photography; imaging and graphic arts

"To change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, meant based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability.

[64] **Patents** ⚭ Photography; imaging and graphic arts

"Display unit configured to display an image corresponding to the image signals formed by the signal processing unit," in patent related to electric camera having image sensing device with sufficient number of pixels capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry, had its plain and ordinary meaning.

[65] **Patents** ⚭ Preferred embodiment in general

Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.

[66] **Patents** ⚭ Radio and telecommunications equipment

"Variable amplitude amplifier," in patent related to cellular telephone with improved means for controlling transmitter output power while reducing current consumption to conserve battery life, meant amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

[67] **Patents** ⚭ Electricity and Electronics

"Function devices equipped with independent functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant equipped with independent functions.

[68] Patents ⇐ Electricity and Electronics

"Component devices for performing different functions," in patent related to methods for controlling power consumption in battery operable information processing device, meant performing different functions.

[69] Patents ⇐ Data processing

"Controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[70] Patents ⇐ Data processing

"Controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), meant for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory.

[71] Patents ⇐ Data processing

"Demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[72] Patents ⇐ Data processing

"Controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory," in patent related to audio decoder in which plurality of decoding program codes were stored in external rather than internal, read only memory (ROM), had its plain and ordinary meaning.

[73] Patents ⇐ In general; utility

US Patent 5,396,443, US Patent 6,329,794, US Patent 6,408,193, US Patent 6,748,317, US Patent 6,754,440, US Patent 6,816,491, US Patent 6,856,760, US Patent 6,928,292, US Patent 7,116,438, US Patent 7,203,517, US Patent 7,671,901, US Patent 8,098,695, US Patent 8,339,493, US Patent 8,736,729. Construed.

[74] Patents ⇐ In general; utility

US Patent 6,424,795, US Patent 6,765,616, US Patent 7,295,767, US Patent 7,447,241, US Patent 7,457,529, US Patent 7,995,897, US Patent 8,057,177, US Patent 8,417,088. Cited.

[75] Patents ⇔ In general; utility

US Patent 7,509,139. Construed and Valid.

Go to Markman Construed Terms

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CLAIM CONSTRUCTION MEMORANDUM AND ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***677** On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, ——— L.Ed.2d ——— (2015).

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); 8,339,493 ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8–10.

APPLICABLE LAW

[1] [2] [3] "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)

(quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

***678** [4] [5] Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

[6] [7] [8] [9] "[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

[10] [11] [12] The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.' " *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

[13] [14] "A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge to resolve any underlying factual disputes." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, ——— U.S. ———, 135 S.Ct. 831, 840–41, ——— L.Ed.2d ——— (2015). For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id.* at 841. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

[15] [16] [17] [18] Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions ***679** that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

[19] [20] There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain

and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

[21] **[22]** To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

[23] To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

[24] **[25]** A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means ... for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

[26] But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional ***680** language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap–On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Personalized Media Communications, L.L.C. v. Int'l Trade Com'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (" '[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means' ")

[27] **[28]** **[29]** **[30]** **[31]** When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291,

1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

[32] For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

[33] **[34]** **[35]** **[36]** Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.' " *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, ------ U.S. ------, 134 S.Ct. 2120, 2124, 189 L.Ed.2d 37 (2014)). Whether a claim is indefinite is determined from the perspective ***681** of one of ordinary skill in the art as of the time the application for the patent was filed. *Nautilus*, 134 S.Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

[37] When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

[38] In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

Term	Agreed Construction
"at least approaches" ('443 Patent claim 1)	Plain and ordinary meaning
"simultaneously" ('292 Patent claims 1 and 2)	Plain and ordinary meaning
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising" / "A mobile communication terminal device	The preambles of claims 1 and 9 of the '517 patent are limiting.

having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit ... , said mobile communication terminal device comprising"	
***682** ('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim 1)	

"means for selecting an object displayed on said display apparatus" ('438 Patent claim 3)	**Function**: selecting an object displayed on said display apparatus **Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. *See, e.g.,* 8:57–9:13, 7:52–8:6, Fig. 2 (106).
"operate to the end" ('794 Patent claims 8 and 14)	Plain and ordinary meaning
***683** "a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed" ('491 Patent claim 9)	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed **Structure**: An antenna and equivalents
Preambles ('491 Patent claims 7–9)	The preambles of claims 7–9 are not limiting.
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences" ('491 Patent claims 1 and 2)	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a first memory" ('491 Patent claims 1, 2, and 7)	Plain and ordinary meaning
"a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially" ('491 Patent claims 1, 2, and 9)	Plain and ordinary meaning
"a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning

('491 Patent claim 2)	
"from an outside"	Plain and ordinary meaning
('491 Patent claim 7)	
"an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1)	
"a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10)	
***684** "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15)	
"an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines"	Plain and ordinary meaning
('493 Patent claim 5)	
"a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5)	
"an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6)	
"an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6)	
"an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"bias condition"	"the bias voltage and/or current setting of the amplifier"

('193 Patent claims 1 and 7)	
"a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7)	
"capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1)	
"controller for controlling operation of said function devices based on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1)	
"a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9)	
Preambles	Preambles are limiting
***685** ('695 Patent, all asserted claims)	
"packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4)	
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4)	
"a state display means including a display means and for displaying on said display means that said apparatus is in one of a standby state and an active state in response	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said

to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	power saving state and said non- power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display device in accordance with the procedures set forth e.g. in the specification at 4:6– 9; 4:49–55; 5:30–37; 7:7–60; 8:64– 68; Figs. 2–4 and 11–13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones ***686** of the moving pictures corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. *See, e.g.*, Figure 6 (130); 13:45–47; 13:49–51; 13:54–57; 13:62–63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43–46; 13:47–49; 13:52–55; 13:60–61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing quantities of the communication quality for each of the groups" ('139 Patent claims 1 and 11)	"group scores derived from the indication of communication quality for each base station in a group"

Docket No. 115–2at B–1–B–14.

At the oral hearing the parties also agreed to the constructions of the following terms:

***687** "GPS receiver means for receiving GPS oriented signals and generating received GPS signals" ('292 Patent claim 1)	**Function**: receiving GPS oriented signals and generating received GPS signals **Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24–32, 2:53–57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals" ('292 Patent claim 1)	**Function**: receiving cellular-oriented signals and generating received cellular signals **Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66–3:4, 4:4–9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result" ('292 Patent claim 1)	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result **Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54–57, 2:57– 60, 3:24–32, 3:33–43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value" ('901 Patent claim 1)	"in response to any change occurring in the video signal inputted to the input portion" "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
"an input entered by the user" ('438 Patent claim 1)	Plain and ordinary meaning
"a cellular telephone adapted to be used in a CDMA system, comprising" ('193 Patent, all asserted claims)	The preambles are limiting

H'rg Tr. at 6:7–10, 111:19–112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of ***688** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37–64, 4:45–5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite: because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Huawei contends that the claim language contains "an obvious grammatical error that renders the term indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100–1 (Akl. Decl.) at ¶¶ 173–75, 186–188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187–90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3–11; Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited ***689** to the RAM embodiment. *Id.* (citing Docket No. 106–7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.' " *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11–12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

[39] **[40]** **[41]** The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S.Ct. at 2129–30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in

a patent by interpretation of a patent where no certification of correction has been issued ... only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)).

[42] [43] The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173–79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

***690** Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24–4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4–34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43–56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination based on one or more inputs"	"merging" / "merged"

Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24–25 (citing '292 Patent 3:64–4:3, 4:36–42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64–4:3, 4:36–42; Docket

No. 95–1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

***691** Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination may be enhanced' by 'using **both** GPS and cellular signals' 'compared to ... using either ... alone.' " *Id.* (citing '292 Patent 4:1–3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17–18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18–19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344 (Fed. Cir. 2006)). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1–27:21, 29:6–30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64–4:3, 4:36–42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1–3, 3:33–59, 3:64–4:3, 4:10–35, 4:36–42. Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. *Id.* at 4:49–56, Abstract, 2:13–18, 3:12–17, 4:43–49, 5:7–12, Figures 2–3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] ***692** positioning means [with] the reliability of the positioning... [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13–18. The specification describes a mathematical function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64–4:3, 4:36–42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43–56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13–18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (requiring claim construction disputes to be resolved).

[44] [45] Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS/cellular positioning results combining unit 400 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. See e.g., (4:42–56), (Fig. 3 at 400); (3:12–17), (5:3–7).	**Function:** combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **Structure:** GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49–56, block 606 in Fig. 2

***693** The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result 202 has no effect on further processing.

Id. at 23–24 (citing '292 Patent 3:64–4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95–1 (Braasch Decl.) ¶¶ 50–51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64–4:3, 4:36–42).

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50–51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16–21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49–56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36–41 of 4:36–56 is not structure for the combiner; 4:42–56 is subsumed by Figure 3; 3:64–4:3 (same); 3:12–17 (inputs and outputs, not structure); 5:3–7 (same)); and citing Akl Decl. at ¶¶ 157–68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history

clearly links or associates that structure to the function recited in the claim." *Medtronic Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed ***694** function. '292 Patent 4:43–56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64–4:3, 4:36–42, 4:49–56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49–50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc.*, 248 F.3d at 1311. The structure adopted below is the corresponding disclosed structure.

[46] The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12–17, 3:64–4:3, 4:36–56, or equivalents thereof.

8. "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result. **Structure:** A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding sections in the specification as provided herein, or equivalents thereof. See e.g., (1:20–27), (3:30–31), block 604 in Fig. 2, (4:4–16), (2:66–3:6), (5:3–7).	**Function:** : (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular-based position result. **Structure:** position calculation unit 301 cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which render the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

***695** As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4–16; *see also* '292 Patent 2:66–3:6 (describing receiver operations); '292 Patent 1:23–23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21–22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26–28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[ ] the receive operations" of baseband signal modulation, synchronization acquisition, and reception

timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46–48, '292 Patent 3:24–32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result L_{cell}'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block ('Calculate positioning result L_{cell}'). Docket No. 100 at 22 (citing '292 Patent Figures 1–2, 3:4–11, 4:10–15; Akl Decl. at ¶¶ 131–35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus*, 700 F.3d at 519–20). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated-or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, " 'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132–37). Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's ***696** briefing on a motion to dismiss under section 101. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions ... [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3–4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4–16, 2:66–3:6, 1:24–29, Braasch Decl. at ¶¶ 46–48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) that performs cellular position calculation processes as described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4–16, 2:66–3:6, 1:24–29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11–13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4–16 and 2:66–3:6. However, the specification does disclose in the passage at 1:24–29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48–2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14–17, 46:18–23.

[47] Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23–27, 4:4–16, 2:66–3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1)

***697**

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure:** A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithms set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding sections in the specification as provided herein, or equivalents thereof. (See, e.g., 12:66–67, block 602 in Fig. 2; 5:58–6:15; 6:3–7).	**Function:** calculating GPS positioning reliability based on the GPS-based position result **Structure:** GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used....
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205....

Docket No. 95 at 18 (citing '292 Patent 3:44–4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize that these processing steps will be executed by a processor. *Id.* Maxell ***698** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS-and cellular-position estimates depending on the reliability for each position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12–17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites ... and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60–65, 3:44–4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22–34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19–20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012); *ePlus*, 700 F.3d at 519–20; Akl Dec. ¶¶ 102–10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112–13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus*, 700 F.3d at 518).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44–4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6–11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations ***699** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49–53, 3:60–63, 4:27–34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60–65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for GPS 201....

'292 Patent 3:44–47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites... and the received signal quality of the signals from the GPS satellites." '292 Patent 3:38–42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50–59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

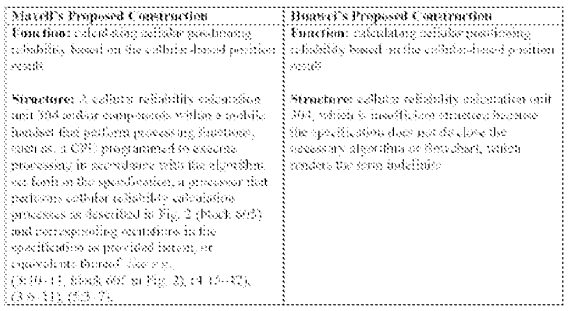
[48] Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60–65, 3:38–4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1)

***700**



Maxell's Proposed Construction	Board's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure:** A cellular reliability calculation unit 304 and/or components within a mobile handset that perform processing functions, such as a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (Block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. (3:6–11; 4:15–42; Fig. 2); (4:15–42); (3:6–11); (3:7–7).	**Function:** calculating cellular positioning reliability based on the cellular-based position result **Structure:** cellular reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22–23 (quoting '292 Patent 3:6–11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for L_{cell} 605 using the number of cellular base stations used in calculating L_{cell} and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6–10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning results combining unit 400.

'292 Patent 4:22–27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations ... and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18–20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31–35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

[49] The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

***701 Structure**: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate cellular positioning reliability, as disclosed at 3:6–10, 4:15–42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures and which have

pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

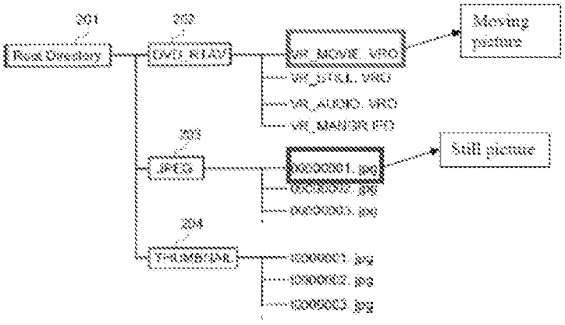
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41–11:14, 11:31–12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

***702** Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method...." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10–11. Maxell points to Figure 2 and Figure 4 as showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id.(citing '440 Patent Figure 4 (emphasis added), 10:49–51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61–63 ("if no fine still picture signal is output ... the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine still pictures and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2–8 (citing '440 Patent 11:15–18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

***703** In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11–12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving

picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003)). Huawei contends that the '440 Patent describes the "present invention" as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50–59, 2:59–3:20, 4:52–60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3–8 (first embodiment), 9:36–42 (second embodiment), 12:38–41 (third embodiment), 13:58–62 (fourth embodiment)).

Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100–19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-picture-only player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100–19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13–14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61–63).

At the oral hearing, Huawei further pointed to the file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1–8 as:

***704**

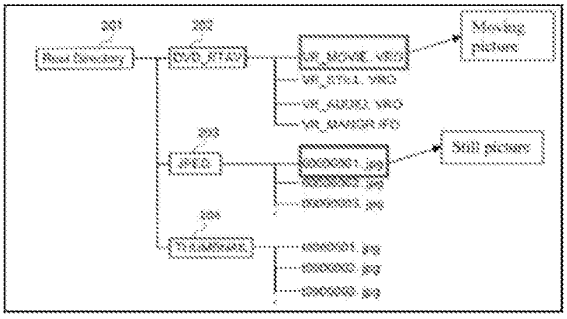
Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares clarified Claims 1-8, and Anderson, as follows.

Claims 1-8	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
First picture	X (no disclosure)
Second picture	Thumbnail and Screennail

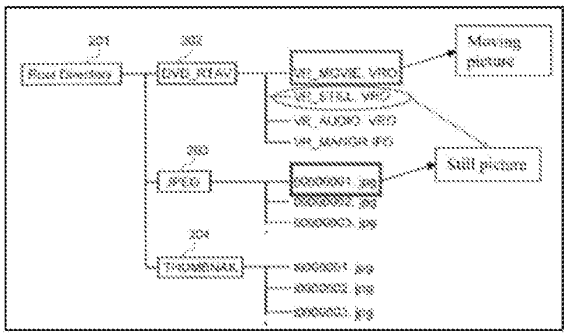
It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

Docket No. 119–3at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2–74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



***705** Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file ... as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under the JPEG directory 203 ....' " *Id.* (quoting '440 Patent 11:2–8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14–15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1315 (Fed. Cir. 2010)). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12–71:3 (citing '440 Patent 2:5–11, 2:12–17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 106 at 2 (citing Docket No. 106–1 at 15:12–13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106–2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106–3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106–4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106–5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations ***706** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[50] Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal

is output." *Id.* at 12:51–64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100–19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See Phillips*, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures ***707** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims 1–8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.' " Docket No. 119–3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See Phillips*, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also Athletic Alternatives, Inc.*, 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

[51] The Court construes the term "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 **Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15**)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures, including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5–7, 8:9–11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14–15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method *and* a still picture encoding method. Docket No. 100 at 15. According to ***708** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by..." term to assert that encoding a still picture using both a still picture encoding

method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second encoding method and other still pictures encoded by the first encoding method from single frame signals ...

Id. at 16 (citing '760 Patent 2:50–57; 2:58–3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5–12 (same), 4:51–59 (same), 4:60–67 (same), 5:4–13 (same), 5:14–20 (same), 5:24–30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:

Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully compares claimed Claims 1 and 2, and Anderson, as follows.

Claims 1 and 2	Anderson (see Fig. 5)
First still picture (MPEG)	X (no disclosure)
Second still picture (JPEG)	Compressed image data
A picture	Thumbnail
X (no disclosure)	Screennail

It is clear that Anderson doesn't disclose Applicant's "first still picture"

Id.(citing Docket No. 100–23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports ***709** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100–23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329.

[52] As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and "second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100–23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips*, 415 F.3d at 1317. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Such is the case here, with statements that do not overcome the claim's clear reference to merely "first" and "second" encoding methods.

[53] Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58–2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

***710** '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5–61, 7:1–8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster"

('517 Patent claim 1)

Maxell's Proposed Construction[1]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Physical interface selection unit 104, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding explanations in the specification as provided herein, or equivalents thereof. See e.g., ('517 Patent 3:5–27, 3:50–61, 7:9–58, 8:48–9:10, 9:37–9:52, 10:42–10:51, and 13:5–16).	**Function:** selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability, determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time** until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure:** Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9 which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

[**Editor's Note:** The preceding image ***711** contains the reference for footnote[3]]

The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33–39, 3:50–61, 4:41–50 and Docket No. 100–2 (Wells Decl.) ¶ 43, *Noah Systems*, 675 F.3d at 1317 and *ePlus*, 700 F.3d at 519–20).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving

speed at all in determining how long to wait before switching even though claim 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407–1) but does not vary the wait time before switching. *Id.* at 27–28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface when it becomes unavailable. *Id.* (citing '517 Patent 6:62–7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62–7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5–10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing ***712** '517 Patent 3:23–31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3–60, 5:25–46, 8:1–9, 8:53–67, Docket No. 106–6 (Caloyannides Decl. B) ¶¶ 27–28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25–28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62–7:8). Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32–68). Maxell contends this is because of different "Rest–State" and "Moving–State" priorities identified in Figure 4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58–9:18, 9:54–10:9).

Maxell contends that the specification provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the

claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. § 112 ¶ 6 is not disclosed. *See WMS Gaming Inc.*, 184 F.3d at 1349; *Aristocrat Techs.*, 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block ***713** S407), Figure 9 (block S910), 5:3–14; 6:28–35, 6:45–52, 6:53–62, 9:5–18, 9:54–10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather high speed versus low speed movement. H'rg Tr. at 96:2–14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45–67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3–14 and 9:5–18. *Id.* at 92:12–94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64–5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2–18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62–7:8. This disclosure does not describe different wait times based on determining the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d at 1349.

[54] Accordingly, the Court construes the "selection switching determination unit for ..." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1)

***714**

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66–7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26–27. Maxell also relies on the "may be set" language to counter Huawei's argument that the time is always set in advance. Docket No. 106 at 6. As to the

reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62–7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24–25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58–64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally ***715** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100–24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing '517 Patent 6:66–7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62–7:8). Huawei contends that "may" only means that the fixed time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62–7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23–84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

[55] The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches ***716** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1–24, 3:58–4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: detecting whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure:** "a sensor," a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents thereof.	This term is written as a means-plus-function element. **Function:** for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure:** Electromagnetic induction systems, electrostatic coupling systems, and Optical systems, listed in Table 1; "image sensor" ('443 '443 "microphone" ('443 '443 "temperature sensor" ('443 '443 "cameras" (Figs. 3A and 3D)

The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2–6; 4:19–23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42–46). Maxell further ***717** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26–27), "pressure sensitive resistance system tablet" ('443 Patent at 11:27–28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28–29), and several others. Docket No. 95 at 7–8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34–36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices ..." ('443 Patent at 11:36–40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance

system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13–19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing '443 Patent 9:13–15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100–27 at 49 (Original claim 1, lines 3–7) ("detecting means for detecting whether an operation medium operated by the user ... approaches or comes in contact with ... the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under Section 112(2) as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100–28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100–29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's § 112 rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing ***718** Docket No. 100–28 (May 6, 1994 Office Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive:

> 1. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> {a)} a detecting means for detecting whether {an operation medium operation by the user, such as a pen or finger or a medium accompanying with the user} a user-associated medium at least approaches {or comes in contact with a whole of or} at least a part of a housing of {the} said apparatus; and

Docket No. 100–29at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various detection schemes listed as "and/or" would allow the claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the

doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See Seachange Int'l, Inc. v. C–COR, Inc.*, 413 F.3d 1361, 1368–69 (Fed. Cir. 2005). Here, the claim language resulting from the amendment is clear.

[56] The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling system, and ***719** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance.

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51–61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62–3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18–26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking and driving, in a system that is not usable in an object car that is running on a road"

The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332–33 (Fed. Cir. 2003)). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing '317 Patent 1:34–37). Maxell contends that the same passage explains ***720** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing '317 Patent 1:37–39). Maxell also argues that nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43–8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10–57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58–9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting

directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31–38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition ... it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19–21, 34–35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36–38; Braasch Decl. at ¶¶ 39–46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31–38. ***721** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

[57] The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure:** insufficient corresponding structure is disclosed

[Editor's Note: The preceding image contains the reference for footnote[6]]

The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100–6 (Andrews Decl.) ¶¶ 49–51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz*, 639 F.3d at 1316). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the general purpose processor that performs those functions." *Id.* at 14–15 (quoting *In re Katz*, 639 F.3d at 1316, citing Braasch Decl. at ¶¶ 50–51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42–43 is sufficient for performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said

server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal ***722** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42–43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server...wherein...said device connected to said server outputting...and receiving...." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40–50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50–54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50–54; *Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47–49), and cellular antenna ('317 Patent at 5:66–67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42–43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40–9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz*, 639 F.3d at 1316 (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13–16.

[58] The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

***723** **Structure**: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40–50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8–13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels

and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34–48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31–39. When taking moving video, a number (e.g., 1200/240 = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64–5:6, 7:40–59, 9:30–36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11–28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8]

***724**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6 Function: "for image sensing" Structure: a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an equal number of vertically arranged pixel lines" (claim 59) See also 4:66–5:6, 7:8–8, 7:40–59, 8:7–22, 8:35–38, 8:51

The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36–39, 10:14–18, and Docket No. 95–4 (Madisetti Decl.) at ¶¶ 35–37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the "image sensing device." *Id.* at 45 (citing '729 Patent 4:36–65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light receiving sensor), with claim 1 of the '729 Patent, which

ZTE alleges does not include the requisite structure for image sensing:

***725**

'725 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern

at 37.

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41–46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals."

at 15:25–30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36–65, 12:50–13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell, the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15–16 (citing '729 Patent 4:36–65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc.*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (emphasis original).

[59] Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that is tantamount to using the word means." *Williamson*, 792 F.3d at 1350. In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart ***726** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of § 112, para. 6.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25–2:2, 2:20–55, 4:36–65, 10:14–18, 12:50–13:15, Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson.*

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37–39. The specification further states "FIG. 2 shows the structure of this image sensing device... [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40–43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"), the

specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See Free Stream*, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017) (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35–44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100–4 (Mansoorian Decl.) at ¶¶ 35–43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

[60] The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1)

***727**

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electronic camera"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "detecting an image instability of the electronic camera" **Structure:** insufficient corresponding structure disclosed

The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that " 'detector' is a sufficiently definite structural term to preclude the application of § 112, P 6." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n*, 161 F.3d at 705; *Raytheon Co. v. Cray, Inc.*, 2017 U.S. Dist. LEXIS 89342, at *69–70 (E.D. Tex. June 9, 2017); *NetFuel, Inc. v. F5 Networks, Inc.*, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017) (concluding that "detector" is "more definite than 'means' or 'mechanism' ")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12–14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47–48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32–4:35). ZTE contends that cameras detect motion of the imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47–49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is

unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

***728** In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'... would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area ... due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian Decl. at ¶¶ 46–50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See Personalized Media*, 161 F.3d at 705; *Raytheon Co.*, 2017 U.S. Dist. LEXIS 89342 at *69–70. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31–4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the ***729** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47–49.

At the oral hearing, Maxell agreed to the Court's construction presented below.

[61] The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

Maxell's Proposed Construction	ZTE's Proposed Construction
"an amount of instability caused by vertical and/or horizontal movement of the electric camera"	indefinite

ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art would recognize that "an amount of image instability of the camera"

refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46–47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12–17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18–20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47–48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54–55). ZTE contends that one of ordinary skill is left ***730** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11–28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

[62] The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" ('729 Patent claim 1)[9]

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in order to correct the image-instability"	"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability."

The parties dispute whether the last portion of the term must be a shift "in a ***731** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes that an objective of the patent is to "reduce[ ] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10–15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11–21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19–22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction must cancel all instability. *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329; *Arlington Indus.*, 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10–15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

[63] The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10]

***732**

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure:** "display screen of a television set/set" (3:22–23) or other screen compatible with NTSC or PAL format (1:33–36; 10:39–41)

The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing *Free Stream*, 2017 WL 1165578, at *25).

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33–34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ 52–54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

'493 Patent	'729 Patent
"a display unit with the display screen, to display an image corresponding to the image signals"	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit"

Id. at 41–42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42–43 (citing '729 Patent 1:32–44, 10:19–22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51–54).

***733** ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33–34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

[64] The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12–28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16–6:54, Figures 1 and 2. Instead

of supplying a fixed bias condition (e.g., B_n) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and ***734** bias values in memory (e.g., G_1B_1, G_2B_2... G_nB_n). '193 Patent 6:6–43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43–54.

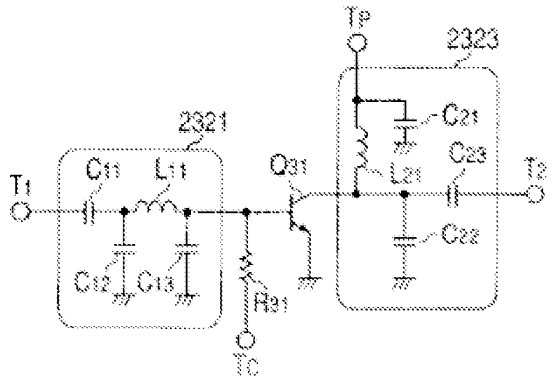
28. "variable amplitude amplifier" ('193 **Patent claims 1 and 7**)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19–21, 5:31–33, 5:40–45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56–57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95–3 (Caloyannides Decl. A) at ¶¶ 48–50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100–7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58–61, 7:10–12). ZTE ***735** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45–46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15–20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45–48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech.*, 758 F.3d at 1365 (Fed. Cir. 2014) (quoting *Thorner*, 669 F.3d at 1365); *see also GE Lighting Solutions*, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a

"clear and unmistakable" surrender. *Cordis Corp.*, 561 F.3d at 1329; *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

[65] ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc.*, 632 F.3d at 1254.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23–35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60–2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) ***736** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16–44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1–6, 6:55–7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5–7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53–54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" (6:1–2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43–44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16–18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31–40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230...." *Id.* at 6:1–2, 3:17–22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43–46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16–18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18–20 (referencing Figure 3).

In context of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8–23.

[66] The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6–11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage ***737** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21–27, 3:57–4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17–27.

29. "function devices(s)" ('794 Patent claim 1)

"component device" / "component devices for performing different functions in the device" ('794 Patent claim 9)

Maxell's Proposed Construction	ZTE's Proposed Construction
"Hardware, software, or a combination of the two that consumes power and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function:** "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31–32); no function otherwise disclosed **Structure:** insufficient corresponding structure disclosed

In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22–161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31–32). Maxell argues that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106–10 (Kiaei Decl.) at ¶¶ 46–49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19–20, 1:32–33, 6:14–15). ***738** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33–35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure if CPU and memory are added to the structure. H'rg Tr. at 159:23–160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Under § 112, ¶ 6, a court may not import functional limitations that are not recited in the claim...") and *Mass Engineered Design, Inc. v. Ergotron, Inc.*, 559 F.Supp.2d 740, 747–48 (E.D. Tex. 2008)

("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100–3 (Wolfe Decl.) at ¶¶ 41–42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2...." Docket No. 100 at 51 (citing '794 Patent 6:15–18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson*, 792 F.3d at 1352 ("[I]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch*, 769 F.3d at 1101 (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing '794 Patent 6:14–15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22–163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function ***739** (function device B)" (1:31–32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332–35 (Fed. Cir. 2006).

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30–33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc.*, 248 F.3d at 1311. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46–49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30–45, 1:55–66, 3:42–43, 3:57–4:12, 4:18–22. The "common function device" of Figure 3 is described differently: "an information process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9–11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14–18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a

whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips*, 415 F.3d at 1314 (other claims can also aid in determining the claim's meaning, because claim terms are ***740** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc.*, 248 F.3d at 1311. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

[67] The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

[68] The Court construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding program code which is transmitted into the internal RAM **25.**

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65–2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11–51, 8:1–15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38–45, 5:31–67, 6:66–7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without requiring a large built-in memory.

***741 18. "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in**

advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)[11]

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory **Structure:** At least one processor, such as a CPU, programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S3-1, S9), Fig. 5 (including steps S3, S3-1) and corresponding citations in the specification at 3:66–4:4, 6:30–7:54, 9:19–38, 9:58–10:48, and FIGS. 1, 4–6, and 9, as well as equivalents thereof	**Function:** claim 2: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" claim 2: "for transferring said plural decoding program codes from said read only memory to said second memory, as relevant, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read only memory to said first memory" **Structure:** claim 1: "a control CPU (FIG 1) connected via a bus between a read only memory and the first memory, running the algorithm of Figs. 4 and 5, for [S1–S12]"

The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed ***742** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4–6 ("integrate the audio decoder including the DSP"); 2:11–13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10–13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35–43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises... an audio decoder 20, [and] an external CPU 50...")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4–6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32–33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32–33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* (citing '491 Patent 4:35–39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49–2:10 (described problems with prior art "built-in" ROM)).

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

***743** Additionally, ZTE argues that Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC § 112, ¶ 6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step ... is a determination of the function of the means-plus-function limitation." *Medtronic, Inc.*, 248 F.3d at 1311. "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42–44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34–43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26–2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises ... an external CPU 50." *Id.* 4:35–39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17–122:23, 170:13–172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17–23.

***744** As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30–35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
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Id. at 9:28–31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

[69] [70] The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said

read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations in the specification at 6:30–7:54 and 9:28–44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12]

***745**

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term, plain and ordinary meaning	Indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence ...," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38–39 (citing Docket No. 95–2 (Maher Decl. A) at ¶¶ 25, 33–34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13–14 (citing Docket 106–8 (Maher Decl. B) at ¶¶ 25, 28–32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself... extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). According to ZTE, the only possible language in the claim that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10–13). ZTE contends this creates ambiguity that renders the claim invalid under Section 112(2). *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59–63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language ***746** itself does not make such a mandate and the claim language is understandable to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See Teva Pharm. USA*, 135 S.Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

[71] The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 Patent claims 1 and 4)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with 35 U.S.C. § 112, ¶ 6. **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside said memory" **Structure**: an external CPU (FIG. 3) connected via a bus between a read only memory and the memory, running the algorithm of FIGs. 4 and 5. (6:30-7:54)

The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57–58 (quoting Docket No. 95–5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing *Sound View Innovations, LLC v. Facebook, Inc.*, 2017 WL 2221177, at *5 (D. Del. May 19, 2017) (" 'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional ***747** terms, but that does not make it means-plus-function."); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 264 F.Supp.2d 135 (D. Del. 2003) ("controller" is not an MPF term); *911EP v. Whelen Eng'g Co., Inc.*, 512 F.Supp.2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller.... Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); *SynQor, Inc. v. Artesyn Techs., Inc.*, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), *aff'd*, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining ..." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." *Williamson*, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52–53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these

claim limitation steps are not part of the "ordinary meaning" of controller as defined in the IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc.*, 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349)); *Robert Bosch, LLC*, 769 F.3d at 1099; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); ***748** *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C.*, 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38–42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

[72] The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning.

All Citations

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Footnotes

1 The Court consolidated the case against Huawei (Case No. 5:16–cv–178) with the case against ZTE (Case No. 5:16–cv–179) for pretrial purposes.

2 The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115–1.

3 Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115–1 at A–6.

4 The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

5 The parties did not submit oral argument for this term.

6 At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

7 The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

8 The parties did not provide oral argument for this term.

9 The parties did not provide oral argument for this term.

10 The parties did not provide oral argument for this term.

11 The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23–119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113–114.

12 The parties did not provide oral argument for this term.

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MAXELL LTD., Plaintiff,

v.

HUAWEI DEVICE USA INC., Huawei Device Co., Ltd., Defendants.

CIVIL ACTION NO. 5:16-CV-00178-RWS

Signed 03/29/2018

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ORDER

ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE

***1** Before the Court is Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s ("Huawei") Motion to Dismiss Counts 2 and 4 of the First Amended Complaint Relating to U.S. Patents 6,928,292 and 7,509,139 as Claiming Non-Patentable Subject Matter Under 35 U.S.C. § 101 (Docket No. 26). The Court heard argument on the motion on September 27, 2017 (Docket Nos. 87, 94). Based on the briefing and argument and for the reasons below, Huawei's Motion is **DENIED**.

LEGAL STANDARD

Under Federal Rule of Civil Procedure 12(b)(6), the Court must dismiss a complaint that does not state a claim for relief that is "plausible on its face." *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (quoting *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 570 (2007)). To state a plausible claim, Plaintiff must plead facts sufficient to allow the Court to draw a reasonable inference that Defendants are liable for the alleged patent infringement. *See id.* (citing *Twombly*, 550 U.S. at 556). At this stage, the Court accepts all well-pleaded facts as true and views those facts in the light most favorable to the Plaintiff. *Bustos v. Martini Club, Inc.*, 599 F.3d 458, 461 (5th Cir. 2010).

Patent eligibility under § 101 is an issue of law, but the legal conclusion may contain underlying factual issues. *Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1340–41 (Fed. Cir. 2013). The Supreme Court has established a two-part test for patent eligibility. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). In determining whether a claim is patent-ineligible under *Alice*, the Court must "first determine whether the claims at issue are directed to a patent-ineligible concept." *Id.* Claims directed to software inventions do not automatically satisfy this first step of the inquiry. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). Rather, "the first step in the *Alice* inquiry ... asks whether the focus of the claims is on [a] specific asserted improvement in computer capabilities ... or, instead, on ... an 'abstract idea' for which computers are invoked merely as a tool." *Id.* at 1335–36.

If the Court determines that the claims are directed to an abstract idea, it must then determine whether the claims contain an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible application. *Alice*,

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134 S. Ct. at 2357. An inventive concept is "some element or combination of elements sufficient to ensure that the claim in practice amounts to 'significantly more' than a patent on an ineligible concept." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014). The Court "consider[s] the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application." *Alice*, 134 S. Ct. at 2355 (internal quotation marks omitted). Even if each claim element, by itself, was known in the art, "an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." *Bascom Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed Cir. 2016).

DISCUSSION

***2** On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell")[1] filed suit against Huawei alleging infringement of several U.S. Patents. Docket No. 1. Huawei challenges two of the patents-in-suit as patent ineligible: U.S. Patent Nos. 6,928,292 ("the '292 Patent") and 7,509,139 ("the '139 Patent"). The Court addresses Huawei's arguments for each patent in turn.

'292 Patent

The '292 Patent relates generally to techniques for determining the position of a device using both GPS and cellular signals. Claim 1 of the '292 Patent reads:

> 1. A mobile handset capable of determining its position using radio waves, the mobile handset comprising:
>
> GPS receiver means for receiving GPS-oriented signals and generating received GPS Signals,
>
> GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result,
>
> GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result,
>
> cellular receiver means for receiving cellular-oriented Signals and generating received cellular Signals,
>
> cellular position calculation means for calculating the mobile handset's position from the received cellular Signals and outputting a cellular-based position result,
>
> cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result, and
>
> GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability, wherein said GPS and cellular receiver means are adapted to receive GPS and cellular-oriented signals simultaneously.

The '292 Patent specification explains that, in the prior art, GPS receivers integrated in mobile devices could not provide sufficient geo-location abilities. Signal intensity was greatly attenuated by blockage from ceilings and walls when devices were indoors and outdoors, when handsets were in proximity to tall buildings or other obstruction, GPS satellites were meeting the signal quality requirements for practical position determination was low. '292 Patent, 1:29–47. Likewise, the patent explains that in areas close to a base station or in rural or mountainous areas with a limited number of base stations, cellular positioning is unreliable. *Id.* at 1:48–57. According to the specification, to address these limitations of the prior art, the inventors proposed a method for accurate position determination in diverse conditions wherein a mobile handset could generate two estimates of its location, one based on GPS signals from satellites and a second based on "synchronization acquisition and reception timing measurements" of cellular signals. *Id.* at 2:66–3:6.

The handset could merge the two estimates based on their reliability. For example, the number of GPS satellites used and the signal quality (e.g., signal-to-noise ratio in decibels) from each satellite informs the reliability of the GPS estimate, while the number of cellular base stations used and signal quality from those cellular stations informs the reliability of the cellular estimate. *Id.* at 2:57–3:11. GPS and cellular reliability measures are merged with the GPS-based and cellular-based estimates into a single, "final" location. *Id.* at 3:6–17.

(1) *Alice* step one[2]

***3** According to Huawei, the '292 Patent is directed to the abstract idea of combining two data sources based on their reliability. Docket No. 26 at 13. Huawei's abstract-

idea argument is primarily a series of comparisons to claims directed to abstract ideas in other cases.

Huawei first analogizes its proffered abstract idea to that considered by the Federal Circuit in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1352 (Fed. Cir. 2016). *Id.* Huawei argues that claim 1 of the '292 Patent, like the claim at issue in *Electric Power Group*, similarly "requires receiving data from two sources—GPS-based and cellular-based estimates of position—and the reliability associated with each of these estimates." *Id.* (citing 830 F.3d at 1353).

Huawei proceeds to argue that "the core of the '292 Patent mirrors the abstract idea deemed ineligible" in *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1091–92 (Fed. Cir. 2016). Particularly, Huawei contends that the claim in *FairWarning*, like claim 1 of the '292 Patent, is just a particular application of collecting and analyzing information, which is an abstract idea. *Id.* at 14.

Huawei also draws parallels between claim 1 of the '292 Patent and the patent invalidated in *In re TLI Communications LLC Patent Litig.*, 823 F.3d 607, 612 (Fed. Cir. 2016), arguing that both use "conventional or generic technology (GPS and cellular functionality) in a well-known environment (a wireless device)." *Id.* (internal quotation marks omitted).

Similarly, Huawei suggests that the '292 Patent is similar to the claims at issue in *Rothschild Location Techs. LLC v. Geotab USA, Inc.*, 2016 WL 3584195, at *5 (E.D. Tex. Jan. 4, 2016), *report and recommendation adopted*, 2016 WL 2847975 (E.D. Tex. May 16, 2016). *Id.* at 15. Huawei argues that the *Rothschild* claims mirror the claims of the '292 Patent and are similarly directed to "a well-understood, fundamental concept of retrieving and sending data along with the requirement that it be performed b[y] two [GPS] positional information devices." *Id.*

Huawei also compares the '292 Patent to a patent recently found to be "directed to collecting information and analyzing that information by mathematical algorithms, which is clearly within the realm of abstract ideas" by the Patent Trial and Appeal Board ("PTAB"). *Id.* at 16 (citing *Ex Parte J. Nathaniel Sloan et al.*, Appeal No. 2014-009817, 2016 WL 7635014, at *4 (PTAB, Dec. 20, 2016)).

According to Huawei, the '292 Patent's combining of GPS and cellular-based position data "does not make the claims concrete" and "the combining step could be performed with any general-purpose processor, in the human mind, or with pen and paper—all the hallmarks of an abstract idea." *Id.* (citing *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Parker v. Flook*, 437 U.S. at 584, 586 (1978); and *TDE Petroleum Data Sols., Inc. v. AKM Enter., Inc.*, 2015 WL 5311059, at *5 (S.D. Tex. Sept. 11, 2015)).

Huawei also contrasts claim 1 of the '292 Patent with claims that have survived *Alice*-step-one scrutiny. *Id.* at 16–17. For example, Huawei suggests that the '292 Patent differs from the "self-referential table" in *Enfish* because it relies on generic components to achieve routine conventional activity. *Id.* Huawei also argues that the patent is not similar to that in *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016), which was directed to specific improvements in computer animation. *Id.* at 17.

***4** In its response, Maxell first takes issue with Huawei's definition of the abstract idea, arguing that the claims are more aptly understood to be directed to a mobile handset that obtains multiple data inputs, including GPS and cellular-location signals, and then, with the aid of specific algorithms, uses [those] signals to determine the handset's specific location." Docket No. 29 at 18.

Maxell then responds to each of Huawei's case law analogies. Maxell argues that the claims are like those in *Enfish* and *McRO* because they are directed to an improvement of computer-related functionality—a specific way in which a mobile handset may provide reliable position information using GPS and cellular wireless signals. *Id.* (citing *Enfish*, 822 F.3d at 1336; and *McRO*, 837 F.3d at 1314). Maxell also contends that the claims require specific hardware beyond that of a generic computer. *Id.* (citing '292 Patent, 5:33, 6:1). Maxell further suggests that, to the extent the claims rely on the use of data, they manipulate that data with specific algorithms to obtain a specific result, the positioning of a handset. *Id.* at 19 (*Electric Power Group*, 830 F.3d at 1354). Additionally, Maxell argues that the result is a technological, concrete solution to the problem of locating a handset. *Id.* (citing *TLI*, 823 F.3d at 612).

Specifically, Maxell argues that the '292 Patent claims differ from those at issue in *Electric Power Group* because, unlike the claim at issue here, those claims did not provide a specific way of enabling a computer to monitor data from multiple sources across an electric power grid and, instead, purported to monopolize every potential solution to the problem. *Id.* (citing *Electric Power Group*, 830 F.3d 1354).

Maxell questions the relevance of *Affinity Labs of Texas, LLC v. DirecTV, LLC*, 838 F.3d 1253 (Fed. Cir. 2016), arguing that the claim in that case did not offer a particular way of performing the claimed function. *Id.* Maxell then argues that, while the claims in *FairWarning* and *Versata* were undoubtedly abstract, they are not instructive because the '292 Patent provides a technological way to solve a technological problem in the prior art. *Id.* at 19–20. And finally, Maxell suggests that *Rothschild* is inapposite because the GPS device in that case was only tangential to the purported invention, which was simply retrieving an address for a point of interest on a GPS device. *Id.* at 20 (citing *Rothschild*, 2016 WL 3584195).

According to Maxell, the claims of the '292 Patent do not use GPS as a tool for implementing an age-old process, but, instead, remedy specific technological problems arising from the convergence of mobile devices and location services. *Id.* at 21. In sum, Maxell argues that the claims improve functionality, rely on specialized hardware, manipulate data in specific ways to obtain tangible results and recite a concrete solution to a real-world problem. *Id.*

In its reply, Huawei argues that the claims are directed to the abstract idea of "combining two data sources based on their reliability," which amounts to "collecting, organizing, recognizing, and/or transmitting information." Docket No. 31 at 3 (citing *Rothschild*, 2016 WL 3584195, at *5; *Electric Power Group*, 830 F.3d at 1352–54).

Huawei also counters Maxell's argument that the claims are similar to those at issue in *Enfish* and *McRO*, suggesting that the '292 Patent neither alters how handsets operate nor applies algorithms that humans cannot compute by hand. *Id.* at 3. Huawei also cites to a case from the PTAB, contending that it supports its argument that weighted averages using generic components performing conventional functions are abstract. *Id.* at 4 (citing *Ex Parte Sloan*, Appeal No. 2014-009817, 2016 WL 7635014, at *4–5 (PTAB Dec. 20, 2016)). According to Huawei, that a claim recites concrete, tangible components is insufficient to escape the abstract-idea inquiry. *Id.* at 4 (citing *TLI*, 823 F.3d 611).

***5** In its surrreply, Maxell claims that Huawei's approach would invalidate any claim involving software and that Huawei's arguments amount to an obviousness attack on the claims. Docket No. 33 at 5–6.

In determining whether the '292 Patent is directed to an abstract idea, a review of the case law is instructive. In *Electric Power Group*, the Federal Circuit considered a patent claim directed to a method of detecting events on an interconnected electric power grid. The claimed method included steps for receiving data, detecting and analyzing events as detected, displaying analytical results and deriving a composite indicator of reliability. *Electric Power Group*, 830 F.3d at 1351–1352. The Federal Circuit concluded that the claim at issue was focused on "collecting information, analyzing it, and displaying certain results of the collection and analysis." *Id.* at 1353. The Court ultimately determined that the claims were patent-ineligible because the advance they purported to make was a "process of gathering and analyzing information of a specified content, then displaying the results, and not any particularly assertedly inventive technology for performing those functions." *Id.* at 1354.

In *McRO*, the Federal Circuit considered patent claims for a method for automatically animating lip synchronization and facial expression of three-dimensional characters. The patented method consisted of a number of steps, including "obtaining" a set of rules and data, generating weight sets and parameters, and applying a final stream of weight sets to a sequence of animated characters. *McRO*, 837 F.3d at 1308. The district court had determined that the claim was directed to the abstract idea of "automated rules-based use of morph targets and delta sets for lip-synchronized three-dimensional animation." *Id.* at 1313. But the Federal Circuit disagreed, explaining that the claimed improvement was allowing computers to produce realistic lip synchronization and facial expressions in animated characters that previously could only be produced by human animators. *Id.* The Federal Circuit also disagreed with the district court's determination that the claims improperly purported to cover all rules, explaining that the patent was properly directed to a means for producing a certain result or effect, not the result or effect itself. *Id.* at 1314–15 (citing *Diamond v. Diehr*, 450 U.S. 175, 182 n.7 (1981)).

Finally, in *Enfish*, the Federal Circuit considered patent claims directed to a data storage and retrieval system for a computer memory. The claim was in means-plus-function format, and the district court construed the relevant "means for configuring" language to require a four-step algorithm:

> 1. Create, in a computer memory, a logical table that need not be stored contiguously in the computer memory, the logical table being comprised of rows and columns, the rows corresponding to records, the columns corresponding

to fields or attributes, the logical table being capable of storing different kinds of records.

2. Assign each row and column an object identification number (OID) that, when stored as data, can act as a pointer to the associated row or column and that can be of variable length between databases.

***6** 3. For each column, store information about that column in one or more rows, rendering the table self-referential, the appending, to the logical table, of new columns that are available for immediate use being possible through the creation of new column definition records.

4. In one or more cells defined by the intersection of the rows and columns, store and access data, which can include structured data, unstructured data, or a pointer to another row.

Enfish, 822 F.3d at 1336–37. The Federal Circuit determined that the claims were not simply directed to any form of storing tabular data but, instead, were *specifically* directed to a self-referential table for a computer database. *Id.* at 1337. The specification taught that a self-referential table functions differently than conventional database structures, and, according to the specification, prior art relational and object-oriented methods were inferior to the claimed table. *Id.* The table was a specific type of data structure designed to improve the way a computer stores and retrieves data in memory, and the specification's disparagement of conventional data structures, combined with the language describing the present invention as including the features that make up a self-referential table, indicated that the claims were directed to a specific implementation of a solution to a problem in the software arts. *Id.* at 1339.

As informed by the specification, the method described in claim 1 of the '292 Patent describes an improvement on a function of a mobile handset: an improved, more reliable and more accurate location determination. The patent specification teaches that prior art calculating methods were unreliable indoors because of blockage and unreliable outdoors in areas close to a base station or rural and mountainous areas. '292 Patent, 1:29–57. The patent purports to improve on the prior art by providing a location determination based in part on a GPS determination and in part on a cellular determination, each adjusted for reliability.

This is not a case where the focus of the claims is on certain independently abstract ideas that use computers as tools. *Electric Power Group*, 830 F.3d at 1354. Indeed, the patentee is not using the handset simply as a device to execute an abstract idea; the abstract idea is intimately tied to the functionality of the handset itself. *Id.* The invention necessarily implicates a mobile handset, and this is not a case where the patentee seeks to patent an algorithm by tying it to a mobile handset or computer because the mobile handset is an integral part of the invention.

Likewise, the claims do not implicate "the primary concern driving § 101 jurisprudence," preemption. *McRO*, 837 F.3d at 1314. The claims of the '292 Patent are not directed to the *effect* or *result* of a more reliable position determination in a handset. Instead, the claims are directed to a specific way of achieving that result: use of a specific algorithm set (or equivalents thereto) to determine reliability and position information. *See* '292 Patent, 1:51–5:2; Figs. 1–3 (disclosing specific algorithms and structures, which inform the invention's scope).

Whether the '292 Patent is directed to an abstract idea is a close question. The claims and the limitations do not readily lend themselves to a determination that the claims are directed towards a nonabstract idea, and in a case such as this, the Court considers whether there is an inventive concept. *Bascom*, 827 F.3d at 1349.

(2) *Alice* step two

***7** At the Rule 12(b)(6) stage, the Court accepts all well-pleaded factual allegations as true and views those facts in the light most favorable to the Plaintiff. *Bustos*, 599 F.3d at 461. "[P]atentees who adequately allege their claims contain inventive concepts survive a § 101 eligibility analysis under Rule 12(b)(6)." *Aatrix*, 882 F.3d 1121, 1126–1127 (Fed. Cir. 2018) (citing *Bascom* 827 F.3d at 1352). "[P]lausible factual allegations may preclude dismissing a case under § 101 where, for example, 'nothing on th[e] record ... refutes those allegations as a matter of law or justifies dismissal under Rule 12(b)(6).' " *Id.* at 1125 (citing *FairWarning*, 839 F.3d at 1097).

For step two, Huawei argues that the claims are directed to "generic computer-based technology" and that there are no features beyond what was well-understood, routine, and conventional in the industry. Docket No. 26 at 17–18. According to Huawei, the patent concedes that calculating a handset's location based on either GPS or cellular signals was known in the prior art and known to be potentially unreliable. *Id.* at 18. Huawei claims that the patentees "did not invent or improve the technology in the claimed GPS- or cellular-

receiver means, GPS- or cellular-position calculation means, or GPS- or cellular-reliability calculation means," and that the components are "off-the-shelf black boxes and are depicted as black boxes in the patent." *Id.* According to Huawei, the claimed GPS and cellular means "do nothing more than spell out what it means to apply conventional activities on GPS and cellular devices." *Id.* (citing *Content Extraction*, 776 F.3d 1343, 1349 (Fed. Cir. 2014) (internal quotation marks omitted)).

Huawei further suggests that that the "combining means" is not inventive, characterizing it as a "generic weighted-average equation." *Id.* According to Huawei, the "simultaneous" adds nothing inventive because an abstract idea does not become inventive due to its timing in a greater process. *Id.* at 18–19.

Additionally, Huawei claims that, unlike the claims in *DDR Holdings*, the '292 Patent claims do not have "additional features" that constitute an inventive step beyond implementing the abstract idea of gathering and analyzing data. Docket No. 31 at 6. According to Huawei, the PTO found that the "exact combination of the GPS and cellular data here was known except for the simultaneous limitations." Docket No. 26 at 5. Huawei argues that, at best, the '292 Patent applies the abstract idea to "a nascent but well-known environment" of mobile handsets and limiting the claims to the particular technological environment is, without more, insufficient. Docket No. 31 at 6 (citing *TLI*, 823 F.3d at 612; *Electric Power Group*, 830 F.3d at 1354).

Maxell responds that the patent's components were not conventional at the time of the inventions. Docket No. 29 at 26. Maxell also points out that the patent office considered the specification and references to determine that the claims were inventive, nonobvious, and novel. *Id.* at 26–27.

Based on the allegations in the pleadings, the '292 Patent contains an inventive concept. The patent explains that, in the prior art, GPS receivers integrated in mobile devices could not provide sufficient geo-location abilities: Particularly, indoor signal intensity was greatly attenuated by blockage from ceilings and walls, and, when handsets were in proximity to tall buildings or other obstructions outdoors, the number of GPS satellites which meet the signal quality requirements for practical position determination was low. '292 Patent, 1:29–47. Likewise, in areas very near to a base station or in rural or mountainous areas with a limited number of base stations, cellular positioning is unreliable. *Id.* at 1:48–57. To address these limitations of the prior art, the inventors proposed a method for accurate position determination in diverse conditions wherein a mobile handset could generate two estimates of its location, one based on GPS signals from satellites and another based on "synchronization acquisition and reception timing measurements" of cellular signals. *Id.* at 2:66–3:6. The handset could merge the two estimates based on the reliability of each, as determined based on, for example, the number of GPS satellites used and the signal quality (e.g., signal-to-noise ratio in decibels) from each satellite. '292 Patent, 2:57–64. The handset could calculate the reliability of the cellular-based estimate based on the number of cellular base stations used and the signal quality from those stations and use the two reliability measures to merge the GPS-based and cellular-based estimates into a single, "final" location. '292 Patent, 3:6–17.

***8** Viewing these allegations in favor of Maxell, the pleadings suggest that the claimed invention is directed to an improvement in the mobile handset itself, not generic components performing conventional activities. Here, where the claims recite "a specific way of overcoming a problem which plagued prior art systems[,] [t]his specific solution, like that found in *DDR Holdings*, demonstrates a sufficient inventive concept." *Art+Com InnovationPool GmbH v. Google, Inc.*, No. 1:14-217 (D. Del. Sept. 9, 2016) (Dyk, J.), Docket No. 470 at 5; *see also X One, Inc., v. Uber Technologies, Inc.*, No. 1:16-cv-06050-LHK, 2017 WL 878381, at *19 (N.D. Cal. Mar. 6, 2017) (finding claims directed to using GPS in a mobile phone to locate friends on a map were patentable because the "combination of the dynamic 'buddy list' or 'use specific group' with GPS technology does provide an inventive concept that satisfies step two of *Alice*" and "the fact that prior art already accomplished the combination of a list of individuals as part of GPS tracking does not necessarily prevent the Court's finding of an inventive concept.").

Huawei's arguments that the PTO found the invention to be known except for the simultaneous limitation and that the simultaneous limitation does not "impart any inventiveness to the claims" do not compel a different result. *See* Docket No. 31 at 6; Docket No. 26 at 5, 20. That the component parts of an invention were known in the prior art does not necessarily prevent the Court's finding of an inventive concept for the claimed invention. The Court declines to conduct a § 102 or § 103 analysis of the simultaneous element based on prior art in the § 101 context, especially at the motion to dismiss stage. "[T]he 'novelty' of any element or steps in

a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter." *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1315 (Fed. Cir. 2016) (citing *Diehr*, 450 U.S. at 188–89; and *Mayo*, 132 S.Ct. at 1303–04); *see also Bascom*, 827 F.3d at 1350 ("an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces"); *X One*, 239 F.Supp. 3d at 1199. Huawei's argument amounts to an attack on one limitation in the claims, but the Court can consider the limitations—not only individually—but as an ordered combination. *Alice*, 134 S. Ct. at 2355. And the question for step two of *Alice* is whether the implementation of the abstract idea involved more than the performance of well-understood, routine, and conventional activities known in the industry: Taking the well-pleaded allegations in the complaint and statements in the patent as true, the invention appears to meet this standard. *See Content Extraction*, 776 F.3d at 1347–48 ("For the role of a computer in a computer-implemented invention to be deemed meaningful in the context of this analysis, it must involve more than performance of well-understood, routine, [and] conventional activities previously known to the industry.") (citing *Alice*, 134 S. Ct. at 2359).

The unrefuted statements in the patent's specification outlining the invention's specific way of overcoming a problem in the prior art suggest that Maxell has stated a claim with respect to the '292 Patent. *See Aatrix*, 882 F.3d at 1125 (citing *FairWarning*, 839 F.3d 1097). Accordingly, Maxell has adequately alleged an inventive concept sufficient to survive a motion to dismiss with respect to the '292 Patent. *See id.* at 1126–1127.

'139 Patent

The '139 Patent relates generally to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. Claim 1 of the '139 Patent reads:

> 1. A connection control method for selecting one base station, to which a terminal is to connect, from a plurality of base stations in a wireless communication system, said connection control method comprising:
>
> ***9** a first step of obtaining an index of communication quality between the terminal and the base stations for each of said plurality of base stations wherein, said plurality of base stations being classified into a plurality of groups;
>
> a second step of calculating characterizing quantities of the communication quality for each of the groups; and
>
> a third step of specifying one of the plurality of groups based on the charactering quantities and selecting one of base stations, which belong to the specified group, as a connection destination base station of said terminal.

(1) *Alice* step one

Huawei claims that the '139 Patent is also patent ineligible because it too is directed to an abstract idea involving the collection and analysis of data using generic computer hardware and functionality. Docket No. 26 at 21–22. Relying on claim 1 as representative, Huawei identifies the abstract idea of the claim as "collecting and calculating metrics associated with a group and then selecting a particular object within a specified group." *Id.* at 22. Huawei argues that the method of claim 1 mirrors the abstract idea held ineligible in *Electric Power Group*, *TLI*, and *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1333–34 (Fed. Cir. 2015). *Id.* at 23–24. The heart of claim 1, according to Huawei, is organizing, calculating, tabulating and selecting, each of which can be done with pen and paper. *Id.* at 24.

Maxell responds that the claims are not directed to an abstract idea. According to Maxell, the claims do not use computers merely as tools and, instead, are directed to a specific improvement to the way computers operate. Docket No. 29 at 28 (citing *Electric Power Group*, 830 F.3d at 1354; and *Enfish*, 822 F.3d at 1336).

Claim 1 of the '139 Patent is directed towards an abstract idea. Accepting Maxell's characterization of the claims—that they are directed towards selecting a base station by obtaining an index of communication quality, calculating characterizing quantities, and using these metrics to perform the selection—the claims are directed towards an idea that mirrors the abstract idea in *Electric Power Group*. In *Electric Power Group*, the Federal Circuit concluded that a similar method, which included steps for receiving data, detecting and analyzing events as detected, displaying analytical results, and deriving a composite indicator of reliability, was focused on "collecting information, analyzing it, and displaying certain results of the collection and analysis." *Electric Power Group*, 830 F.3d at 1353. Because Claim 1 is

directed towards an abstract idea, the Court proceeds to *Alice* step two.

(2) *Alice* step two

In its step-two argument, Huawei contends that the claims of the '139 Patent are patent-ineligible for lack of inventive concept. Docket No. 26 at 25. Huawei suggests that the limitations in claim 1 of the '139 Patent add nothing inventive to its abstract idea either considered individually or as an ordered combination. *Id.* Instead, according to Huawei, claim 1 contains "only functional and result-oriented limitations ... that are 'generic features' and 'routine functionalities' of wireless terminals." *Id.* at 26 (citing *Affinity Labs*, 838 F.3d at 1262).

For step two, Maxell argues that the claims contain an inventive concept because the claims combine conventional components in unconventional and specific ways to solve problems in the prior art. Docket No. 29 at 29. Maxell points to the patent specification, wherein the patentees describe that previous methods of selecting base stations would not establish high quality connections and would result in the interruption of voice calls and streaming content. *Id.* (citing '139 Patent, 1:56–64). Maxell claims that the patentees "set forth a technological solution that involved obtaining an index of communication quality between the terminal and a plurality of base stations in a plurality of groups." *Id.* at 29–30 (citing '139 Patent, 9:50–59). Maxell suggests that the patentees' solution also involved calculating "characterizing quantities" of the communication quality of each group of base stations, specifying a group of base stations using the characterizing quantities and then selecting a base station within the group. *Id.* at 30 (citing '139 Patent, 9:60–63). Relatedly, Maxell argues that claims 1–16 of the '139 Patent each contain specific limitations directed to a specific way of selecting a base station using an index of communication quality and characterizing quantities. *Id.* (citing '139 Patent, 9:50–12:26). Finally, Maxell notes that the claims of the '139 Patent do not preempt every way of selecting a particular object within a group by collecting and calculating metrics associated with a group, and, instead, apply the principle to a technical problem arising in mobile networks. Docket No. 33 at 9. According to Maxell, the claims are not directed towards the result of selecting a base station from a group; instead, the claims recite a way of selecting a base station by obtaining an index of communication quality, calculating characterizing quantities, and using these metrics to perform the selection. *Id.* (citing '139 Patent, 9:50–63).

***10** At the Rule 12(b)(6) stage, the Court accepts all well-pleaded factual allegations as true and views those facts in the light most favorable to the Plaintiff. *Bustos*, 599 F.3d at 461. Based on the pleadings, the Court is persuaded that Plaintiff has stated a claim with respect to the '139 Patent.

Specifically, the patent specification describes that the prior selection methods for base stations would result in interruption of voice calls and streaming content and that the patentees advanced a technological solution requiring obtaining an index of communication quality between the terminal and a plurality of base stations in a plurality of groups. '139 Patent, 1:56–64, 9:50–59. As part of the process, the device would calculate characterizing quantities of the communication quality of each group of base stations, specify a group of base stations using the characterizing quantities, and then a select base station within the group. *Id.* 9:60–63. And claims 1–16 of the '139 Patent each contain specific limitations directed to a specific way of selecting a base station using an index of communication quality and characterizing quantities. '139 Patent, 9:50–12:26. For example, independent claims 1, 11, and 15 include detailed and limiting recitations regarding implementation of the specific solution that the inventors of the '139 Patent conceived for solving the problems of prior-art techniques. The '139 Patent advances specific ways the invention contains an inventive concept sufficient to withstand a motion to dismiss under Rule 12(b)(6). *See Aatrix*, 882 F.3d at 1126–1127.

CONCLUSION

Finding that both the '292 Patent and the '139 Patent are not drawn to ineligible subject matter at the motion to dismiss stage, Huawei's Motion to Dismiss (Docket No. 26) is **DENIED**.

All Citations

Not Reported in Fed. Supp., 2018 WL 4179107

Footnotes

1 Plaintiff Hitachi Maxell, Ltd., which originally filed the Complaint in this matter, was replaced by Plaintiff Maxell on October 26, 2017. Docket No. 102.

2 Evaluation of a patent claim's subject matter eligibility under § 101 can proceed even before formal claim construction, and claim construction is not an inviolable prerequisite to a validity determination under § 101. *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1374 (Fed. Cir. 2016); *see Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018) ("the court must resolve the disputes to whatever extent is needed to conduct the § 101 analysis, which may well be less than a full, formal claim construction."). The Court does not find that a full claim construction analysis is necessary to resolve the instant motion. Neither party has proposed formal constructions for the purposes of the motion, although Maxell argues that claim construction will affect the § 101 analysis because it will "likely limit the GPS and cellular reliability calculation means to the corresponding structure described in the specification and equivalents thereof." Docket No. 33 at 3. Huawei faults Plaintiff for failing to identify specific constructions and argues that construction is unnecessary. Docket No. 31 at 2. The Court notes that for its § 101 analysis, it interprets the structures of the means-plus-function limitations in claim 1 of the '292 patent generally to perform algorithms disclosed in the specification. See '292 patent, 1:51–5:2; Figs. 1–3 (disclosing specific algorithms and structures informing the invention's scope).

End of Document

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2019 WL 994660 (Patent Tr. & App. Bd.)
Only the Westlaw citation is currently available.

HUAWEI DEVICE CO., LTD., Petitioner,

v.

MAXELL, LTD., Patent Owner.

Patent Trial and Appeal Board.
Case IPR2018-00251
Patent 7,203,517 B2
Entered: February 28, 2019

Attorneys and Law Firms

PETITIONER: David Garr, Greg Discher, Anupam Sharma, Peter Chen, dgarr@cov.com, gdischer@cov.com, asharma@cov.com, pchen@cov.com

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Before LYNNE E. PETTIGREW, MINN CHUNG, and TERRENCE W. McMILLIN, Administrative Patent Judges.

ORDER

Conduct of the Proceeding

37 C.F.R. § 42.5

***1** On February 15, 2019, the parties advised the Board via email that the parties have reached a settlement resolving all disputes between the parties in this proceeding. On February 28, 2019, the parties informed the Board via email that they are working on the final settlement documents and requested that Due Date 4 under the Scheduling Order (Paper 9), as modified by the parties' Joint Stipulation (Paper 14), including the date for requesting oral argument (February 28, 2019), be taken off the calendar in view of the anticipated final settlement.

The parties also request that they be permitted to request an oral hearing and file papers due on Due Date 4 if the settlement cannot be completed.

Under the current Scheduling Order, the oral hearing, if requested by the parties, is scheduled for April 10, 2019. In view of this date and upon considering the parties' request, the due date for requesting oral argument is changed to March 12, 2019. The parties may stipulate to a change to the due date for filing papers due on Due Date 4 in accordance with the instructions set forth in the Scheduling Order.

Accordingly, it is hereby:

ORDERED that the due date for requesting oral argument in this proceeding is changed to March 12, 2019; and

FURTHER ORDERED that all remaining due dates in this proceeding remain unchanged, subject to the parties' joint stipulation, as outlined in the Scheduling Order.

End of Document

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Citing References (52)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**1.** Apple Inc. v. Maxell, Ltd. 2020 WL 5733030, *1+ , Patent Tr. & App. Bd.	Sep. 24, 2020	Administrative Decision		—
Examined by	**2.** Patent Owner Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,339,493 APPLE INC., Petitioner, v. MAXELL, LTD., Patent Owner. 2020 WL 3486288, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 25, 2020	Administrative Filing		—
Examined by	**3.** Petition for Inter Partes Review of U.S. Patent No. 8,339,493 APPLE INC., Petitioner, v. MAXELL, LTD., Patent Owner. 2020 WL 1292432, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 17, 2020	Administrative Filing		—
Examined by	**4.** Patent Owner's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,339,493 OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., Patent Owner. 2018 WL 5880629, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 09, 2018	Administrative Filing		—
Examined by	**5.** Petition for Inter Partes Review of OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., formerly known as Hitachi Maxell, Ltd... 2018 WL 3091111, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 20, 2018	Administrative Filing		—
Examined by	**6.** Patent Owner's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,339,493 ZTE CORPORATION, and ZTE (USA), Inc., Petitioner, v. MAXELL, LTD., Patent Owner. 2018 WL 1162668, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 05, 2018	Administrative Filing		—
Examined by	**7.** Petition for Inter Partes Review of U.S. Patent No. 8,339,493 Pursuant to 35 U.S.C. ss 311-319 and 37 C.F.R. s 42 ZTE CORPORATION, and ZTE (USA), Inc., Petitioners, v. HITACHI MAXELL, LTD., Patent Owner. 2017 WL 6210613, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 22, 2017	Administrative Filing		—
Examined by	**8.** First Amended Complaint for Patent Infringement MAXELL, LTD., Plaintiff, v. APPLE INC., Defendant. 2019 WL 8629077, *1+ , E.D.Tex. (Trial Pleading)	Oct. 23, 2019	Petition		—

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Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**9.** Amended Answer and Counterclaims of ZTE (USA) Inc. to Complaint for Patent Infringement HITACHI MAXELL, LTD., Plaintiff, v. ZTE CORPORATION and ZTE (USA) Inc., Defendants. 2017 WL 2704230, *1+ , E.D.Tex. (Trial Pleading)	Jan. 04, 2017	Petition		—
Examined by	**10.** Answer and Counterclaims of ZTE (USA) Inc. to Complaint for Patent Infringement HITACHI MAXELL, LTD., Plaintiff, v. ZTE CORPORATION and ZTE (USA) Inc., Defendants. 2016 WL 9184506, *1+ , E.D.Tex. (Trial Pleading)	Dec. 14, 2016	Petition		—
Examined by	**11.** Opening Expert Report of Dr. Barmak Mansoorian, Ph.D. Regarding Invalidity of U.S. Patent Nos. 8,339,493 & 8,736,729 HITACHI MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA INC. and Huawei Device CO., LTD., Defendants; Hitachi Maxell, Ltd., Plaintiff, v. Zte Corporatio... 2018 WL 7624807, *1+ , E.D.Tex. (Expert Report and Affidavit)	June 01, 2018	Expert Materials		—
Examined by	**12.** Declaration of Barmak Mansoorian, Ph.D., in Support of Defendants' Responsive Claim Construction Brief HITACHI MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA INC. and Huawei Device Co., Ltd., Defendants; Hitachi Maxell, Ltd., Plaintiff, v. ZTE Corporatio... 2017 WL 6387910, *1+ , E.D.Tex. (Expert Report and Affidavit)	Oct. 23, 2017	Expert Materials		—
Examined by	**13.** Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. s 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Cla... MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA INC. and Huawei Device Co., Ltd., Defendants. MAXELL, LTD., Plaintiff, v. ZTE CORPORATION and ZTE USA In... 2018 WL 1779034, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Mar. 07, 2018	Motion		—
Discussed by	**14.** Petition for Inter Partes Review Under 35 U.S.C. s311-319 and 37 C.F.R. s42 ASUSTEK COMPUTER INC. and ASUS Computer International, Petitioners, v. MAXELL, LTD., Patent Owner. 2018 WL 5075563, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 16, 2018	Administrative Filing		—
Discussed by	**15.** Petition for Inter Partes Review Under 35 U.S.C.s311-319 and 37 C.F.R. s42 ASUSTEK COMPUTER INC. and Asus Computer International, Petitioners, v. MAXELL, LTD., Patent Owner. 2018 WL 5075564, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 16, 2018	Administrative Filing		—

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Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**16.** Petition for Inter Partes Review of U.S. Patent No. 9,100,604 BLACKBERRY CORPORATION, Petitioner, v. MAXELL LTD., Patent Owner. 2018 WL 5076424, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 16, 2018	Administrative Filing		—
Discussed by	**17.** Petition for Inter Partes Review of U.S. Patent No. 8,059,177 OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., formerly known as Hitachi Maxell, Ltd... 2018 WL 3077258, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 20, 2018	Administrative Filing		—
Discussed by	**18.** Petition for Inter Partes Review of U.S. Patent No. 9,100,604 OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., formerly known as Hitachi Maxell, Ltd... 2018 WL 3077259, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 20, 2018	Administrative Filing		—
Discussed by	**19.** Petition for Inter Partes Review of U.S. Patent No. 9,100,604 OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., formerly known as Hitachi Maxell, Ltd... 2018 WL 3077260, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 20, 2018	Administrative Filing		—
Discussed by	**20.** Plaintiff Maxell, Ltd.'s Reply Claim Construction Brief MAXELL, LTD., Plaintiff, v. APPLE INC., Defendant. 2019 WL 8063327, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Dec. 17, 2019	Motion		—
Discussed by	**21.** Plaintiff Maxell, Ltd.'s Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and... MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA INC. and Huawei Device Co., Ltd., Defendants. MAXELL, LTD., Plaintiff, v. ZTE CORPORATION and ZTE USA In... 2018 WL 4036047, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	June 01, 2018	Motion		—
Discussed by	**22.** Defendants ZTE USA Inc.'s Motion for Summary Judgment Regarding Non-Infringement Under Doctrine of Equivalents HITACHI MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA, INC., and Huawei Device Co., LTD., Defendants. HITACHI MAXELL, LTD., Plaintiff, v. ZTE USA INC.... 2018 WL 1778957, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Mar. 09, 2018	Motion		—

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Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**23.** Plaintiff Maxell, Ltd.'s Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and... MAXELL, LTD., Plaintiff, v. HUAWEI DEVICE USA INC. and Huawei Device Co., Ltd., Defendants. MAXELL, LTD., Plaintiff, v. ZTE CORPORATION and ZTE USA In... 2018 WL 1779036, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Mar. 02, 2018	Motion		—
Discussed by	**24.** Defendants Huawei Device USA Inc., Huawei Device Co., Ltd., and ZTE USA Inc.'s Claim Construction Brief in Response HITACHI MAXELL, LTD., v. HUAWEI TECHNOLOGIES CO. LTD., et al. 2017 WL 6061088, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Oct. 23, 2017	Motion		—
Cited by	**25.** Patent Owner's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 8,059,177 OLYMPUS CORPORATION, Olympus Corporation of the Americas, and Olympus America Inc., Petitioners, v. MAXELL LTD., Patent Owner. 2018 WL 5880628, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 09, 2018	Administrative Filing		—
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Mentioned by	**29.** Portable terminal with the function of walking navigation LitAlert P2019-12-02	Mar. 14, 2019	Lit Alert		—
Mentioned by	**30.** Information processing apparatus including arrangements for activation to and deactivation from a power-saving state LitAlert P2016-48-13	Nov. 18, 2016	Lit Alert		—

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Treatment	Title	Date	Type	Depth	Headnote(s)
Mentioned by	**31.** Petition for Inter Partes Review of U.S. Patent No. 9,544,517 Pursuant to 35 U.S.C. ss 311-319, 37 C.F.R. s 42 In re Patent of: Nakano et al. 2019 WL 470485, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Feb. 06, 2019	Administrative Filing		—
Mentioned by	**32.** Defendant Apple Inc.'s Motion for Partial Dismissal of Plaintiff's Complaint for Failure to State a Claim MAXELL, LTD., Plaintiff, v. APPLE INC., Defendant. 2019 WL 6605091, *1 , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	May 23, 2019	Motion		—
Mentioned by	**33.** P.R. 4-3 Joint Claim Construction and Prehearing Statement MAXELL, LTD., Plaintiff, v. APPLE INC., Defendants. 2019 WL 7630231, *1 , E.D.Tex. (Trial Filing)	Oct. 16, 2019	Filing		—
Mentioned by	**34.** P.R. 4-3 Joint Claim Construction and Prehearing Statement HITACHI MAXELL, LTD., v. HUAWEI TECHNOLOGIES CO. LTD., et al. 2017 WL 6061089, *1 , E.D.Tex. (Trial Filing)	Sep. 01, 2017	Filing		—
—	**35.** IMAGE PICK-UP E.G. CHARGE COUPLED DEVICE FOR VIDEO-CAMERA, ACQUIRES IMAGE OF PHOTOGRAPHED OBJECT WITH SUBSTANTIALLY HIGHER NUMBER OF PIXELS IN COMPARISON WITH IMAGE SCANNING LINES Out Of Pkts. DWPI 2002-260726+	Jan. 11, 2000	DWPI	—	—
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—	**38.** RF 030648/0217 Out Of Pkts.	June 12, 2013	Assignments	—	—
—	**39.** PatStat 8339493	May 19, 2020	Patent Status Files	—	—
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—	**41.** PatStat 8339493	Aug. 14, 2018	Patent Status Files	—	—
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—	**45.** ELECTRIC CAMERA Out Of Pkts. US PAT 10554917+ , U.S. PTO Utility	Feb. 04, 2020	Patents	—	—
—	**46.** ELECTRIC CAMERA Out Of Pkts. US PAT 10462403+ , U.S. PTO Utility	Oct. 29, 2019	Patents	—	—
—	**47.** ELECTRIC CAMERA Out Of Pkts. US PAT 10397507+ , U.S. PTO Utility	Aug. 27, 2019	Patents	—	—
—	**48.** ELECTRIC CAMERA Out Of Pkts. US PAT 9544517+ , U.S. PTO Utility	Jan. 10, 2017	Patents	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**49.** ELECTRIC CAMERA Out Of Plan US PAT 9100604+ , U.S. PTO Utility	Aug. 04, 2015	Patents	—	—
—	**50.** ELECTRIC CAMERA Out Of Plan US PAT 8736729 , U.S. PTO Utility	May 27, 2014	Patents	—	—
—	**51.** ELECTRIC CAMERA Out Of Plan US PAT APP 20180241958+ , U.S. PTO Application	Aug. 23, 2018	Patents	—	—
—	**52.** ELECTRIC CAMERA Out Of Plan US PAT APP 20170104945+ , U.S. PTO Application	Apr. 13, 2017	Patents	—	—
—	**53.** ELECTRIC CAMERA Out Of Plan US PAT APP 20150195468+ , U.S. PTO Application	July 09, 2015	Patents	—	—
—	**54.** ELECTRIC CAMERA Out Of Plan US PAT APP 20140232915+ , U.S. PTO Application	Aug. 21, 2014	Patents	—	—

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US8339493B2 - Electric camera

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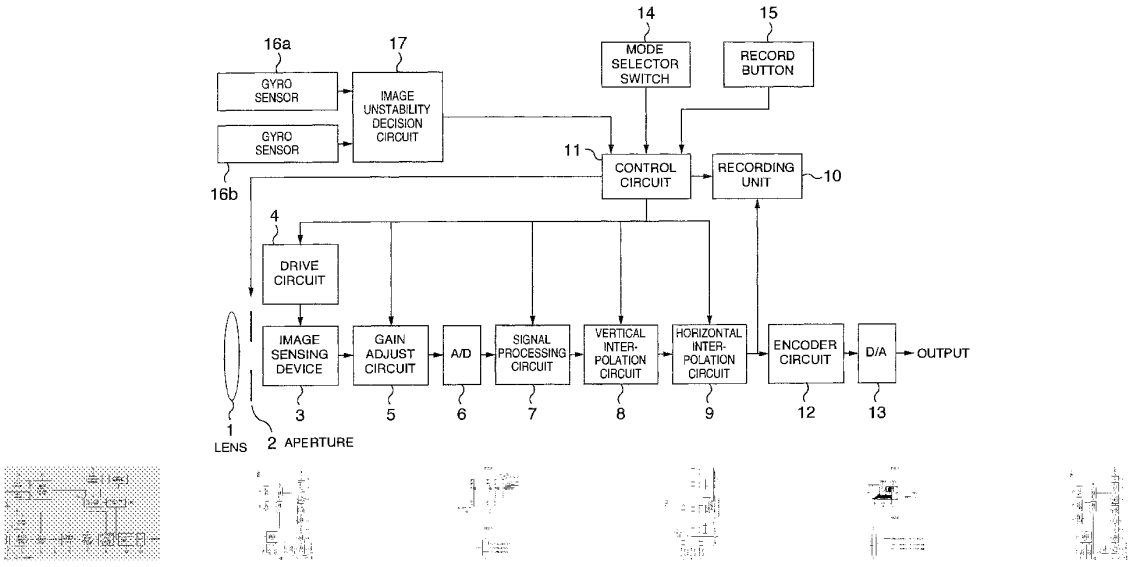
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1/9 Clipped image



Abstract

An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the

image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

Original

Claims

1. An electric camera comprising: an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines, wherein N is equal to or greater than three times a number of effective scanning lines M of a display screen; a signal processing unit, that generates image signals by using the output signals of the image sensing device; and a display unit with the display screen, to display an image corresponding to the image signals; wherein during monitoring in a static image mode, the signal processing unit generates the image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K1 pixels; wherein during recording in a moving video mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K2 pixels, a value of K1 being different from a value of K2; and wherein during recording in the static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in the N number of vertically arranged pixel lines, to provide N pixel lines.

2. An electric camera according to the claim 1 , wherein the value K1 is larger than the value K2.

3. An electric camera according to the claim 1 , wherein during the moving video mode, the signal processing unit generates the image signals by using the signal charges mixed or culled at pixel intervals of K2 pixels.

4. An electric camera according to the claim 3 , comprising: an image-instability detector which detects an image-instability of the electric camera; wherein the signal processing unit generates image signals by using the part of signal charges mixed or culled at pixel intervals of K2 pixels, the part being changed according to an amount of image-instability detected by the instability detector to correct the image-instability, during the moving video mode.

5. An electric camera comprising: an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines; a signal processing unit that generates image signals by processing the output signals of the image sensing device; and a display unit with a display screen, that displays an image corresponding to the image signals; wherein when recording an image in a static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines; wherein when monitoring the image in the static image mode, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and wherein when recording the image in a moving video mode, the signal processing unit generates the image signals by using a portion of, or the entirety of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.

6. An electric camera according to the claim 5 , further comprising: an image-instability detector which detects an image-instability of the electric camera; and wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates the image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

7. An electric camera according to the claim 5 , wherein a value of the first distance is larger than a value of the second distance.

8. An electric camera according to the claim 5 , wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of the display screen.

9. An electric camera according to the claim 8 , wherein the fixed parameter is equal to three.

10. A method for operating an electric camera, wherein the electric camera includes the features of an image sensing device with a light receiving surface having an array of pixels arranged vertically and horizontally in a grid pattern with an N number of vertically arranged pixel lines, a signal processing unit that generates image signals by processing the output signals of the image sensing device, and a display unit with a display screen that displays an image corresponding to the image signals, the method comprising: selecting between a static image mode and a moving video mode, and when in the static image mode, selecting an operation from a list including (1) recording the image in the static image mode, and (2) monitoring the image in the static image mode; upon selecting the operation of recording the image in the static image mode, using the signal processing unit to generate the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines; upon selecting the operation of monitoring the image in the static image mode, using the signal processing unit to generate the image signals by using pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines of the image sensing device to provide only pixel lines separated from one another by intervals of a given distance; and upon selecting the operation of recording the image in the moving video mode, using the signal processing unit to generate the image signals by using a portion of, or the entirety of, the N number of vertically arranged pixel lines which have been mixed or culled to provide only pixel lines separated from one another by intervals of a second distance, wherein a value of the second distance is different from a value of the first distance.

11. A method for operating an electric camera of claim 10 , wherein when recording in the moving video mode, in order to correct image-instability, the signal processing unit generates the image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by a instability detector which detects an image-instability of the electric camera.

12. A method for operating an electric camera of claim 10 , wherein the value of the first distance is larger than the value of the second distance.

13. A method for operating an electric camera of claim 10 , wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of the display screen.

14. A method for operating an electric camera of claim 13 , wherein the fixed parameter is equal to three.

Original

Families

INPADOC

This section contains all family relations of this particular document. For more information about the different families please refer to the Manual (Glossary/Families).

(https://worldwide.espacenet.com/publicationDetails/inpadocPatentFamily?CC=US&NR=8339493B2&KC=B2&FT=D&ND=&date=20121225&DB=&locale=)

Extended (20)	Complete (20)	Main (15)	Domestic (1)	Application number	Publication	Title	Status
2000-01-11 Priority claims JP00006064 JP2000006064 US09520836 US10660710 US12845266 US13681495 US14264243 US14661227 US15386656	2000-01-11 Priority claims JP00006064 JP2000006064 US09520836 US10660710 US12845266 US13681495 US14264243 US14661227 US15386656	2000-01-11 Priority claims JP2000006064 US09520836 US10660710 US12845266 US13681495 US14264243 US14661227 US15386656	2000-01-11	15959774 US15959774	US10462403B2	Electric camera	Granted
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			2000-01-11	15386656 US15386656	US10554917B2	Electric camera	Granted
			2000-01-11	14264243 US14264243	US9100604B2	Electric camera	Granted
			2000-01-11	2000006064 JP2000006064	JP3991543B2	Imaging device	Ceased
				2000006064 JP2000006064	JP2001197371A	IMAGE PICKUP DEVICE	Ceased
			2000-01-11	12845266 US12845266	US8339493B2	Electric camera	Granted
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			2000-01-11	14661227 US14661227	US9544517B2	Electric camera	Granted
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				10660711 US10660711	US20040046882A1	Electric camera	Granted
			2000-01-11	13681495 US13681495	US8736729B2	Electric Camera	Granted
			2000-01-11	09520836 US09520836	US6765616B1	Electric camera	Granted
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			2000-01-11	12845266 US12845266	US20100289907A1	ELECTRIC CAMERA	Granted
			2000-01-11	14661227 US14661227	US20150195468A1	ELECTRIC CAMERA	Granted
			2000-01-11	13681495 US13681495	US20130093933A1	ELECTRIC CAMERA	Granted

Description

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation of U.S. application Ser. No. 10/660,710 Aug. 12, 2003 U.S. Pat. No. 8,059,177, and is related to U.S. application Ser. No. 10/660,711, filed Sep. 12, 2003, now U.S. Pat. No. 7,403,226, issued Jul. 22, 2008, both of which are divisional applications of U.S. application Ser. No. 09/520,836, filed Mar. 8, 2000, now U.S. Pat. No. 6,765,616, issued Jul. 20, 2004, the subject matter of which is incorporated by reference herein.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to a photography related to video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

[0003] Electric cameras using solid-state image sensors such as CCDs (charge-coupled devices) include a so-called video camera or camcorder for taking moving images and a so-called digital still camera for taking still images. In recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.

[0004] In a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL. Therefore, the effective number of vertically arranged pixels or picture elements on the image sensing device used in such a camera is determined to enable television signals to be generated. The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines (the number of scanning lines actually displayed on the monitor which is equal to the number of scanning lines in the vertical blanking period subtracted from the total number of scanning lines in each field). To realize this, the image sensing device has about 480 pixel rows as the standard effective number of vertically arranged pixels. That is, the signals of two vertically adjoining pixels in each field are mixed together inside or outside the image sensing device to generate about 240 scanning lines, and the combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

[0005] Some image sensing devices to take moving images according to the NTSC system have an area of pixels for image stabilization added to the area of effective pixel area, thus bringing the effective number of vertically arranged pixels to about 480 or more. In this case, an area beyond 480th pixels is read out at high speed during the vertical blanking period and therefore the signals thus read out are not used as effective signals. Therefore, the video signals can only be generated from those signals coming from the area of about 480 vertically arranged pixels. When such a camera is used to photograph a still image, it is relatively easy to generate a static image signal conforming to, for example, JPEG (Joint Photographic Expert Group) from the signals coming from the same pixel area that is used to take a moving image. A problem remains, however, that the number of vertically arranged pixels obtained is limited to around 480, making it impossible to produce more detailed static image signals.

[0006] In a camera having an image sensing device with the area of pixels for image stabilization mentioned above, a method of alleviating this problem may involve using the entire area of effective pixels including the area of image stabilization pixels in photographing a still image. Even when photographing a still image, however, the photographed image needs to be monitored for check and, for that purpose, it is necessary to generate signals conforming to the television system from signals read out from all effective pixels.

[0007] An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.

[0008] This conventional camera, however, requires a large processing circuit, such as field memory, for signal conversion. Another drawback is that the image sensing device readout cycle is a plurality of times the field cycle, degrading the dynamic resolution. Even with the use of this circuit, the number of pixels obtained as the static image signals is limited to the number of effective pixels used for moving videos plus the area of image stabilization pixels.

[0009] In a digital still camera designed for taking still images, there has been a trend in recent years toward an increasing number of pixels used on the moving video image sensing device in order to obtain higher resolution static image signals. When taking a moving image or monitoring the video, it is necessary to generate signals that conform to the television system. The number of pixels on such an image sensing device, however, does not necessarily match the number of scanning lines of the television system and therefore some form of conversion means is required.

[0010] The conversion means may involve, as in the video camera with the area of image stabilization pixels, reading out signals from the image sensing device taking a longer time than the field cycle and interpolating them to generate television signals. This method has, in addition to the problem described above, a drawback that the readout cycle increases as the number of pixels increases, further degrading the dynamic resolution.

[0011] To mitigate this problem, JP-A-9-270959 discloses an apparatus which mixes together or culls the pixel signals inside the image sensing device to reduce the number of signals to be read and therefore the read cycle. Although this apparatus alleviates the problem of the degraded dynamic resolution, it requires a large processing circuit such as field memory to perform time-axis transformation to generate signals conforming to the television system and the image sensing device itself needs to have a special structure for performing desired mixing and culling.

SUMMARY OF THE INVENTION

[0012] The present invention relates to a photography of video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

[0013] The conventional electric cameras, as described above, have drawbacks that when taking a still picture by using a video camera, the number of pixels is not sufficient and that when taking a moving image with a still camera, the associated circuit inevitably increases and the dynamic image quality deteriorates. Taking both moving and static images of satisfactory quality with a single camera is difficult to achieve. In addition to solving the above problems, to obtain good dynamic picture quality by using an image sensing device having a large number of pixels intended for still images requires extracting a pixel area that is used to realize an image stabilizing function. The conventional art and cameras do not offer a means to accomplish this function.

[0014] An object of the present invention is to provide an electric camera that solves these problems and which uses an image sensing device with a sufficient number of pixels for still images and enables taking of highly detailed still images and a moving video taking with reduced image quality degradation without increasing circuitry such as field memory. It is also an object of the present invention to provide an electric camera that can also realize the image stabilizing function.

[0015] According to one aspect of this invention, the electric camera to realize the above objectives has: an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system; a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of every K pixels to produce a number of lines of output signals which corresponds to the number of effective scanning lines M, K being at least one of integers equal to or less than an integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device); and a signal processing unit to generate image signals by using the output signals of the image sensing device.

[0016] As explained above, since this invention eliminates the limit on the number of vertically arranged pixels, an electric camera can be provided which enables taking of highly detailed still images and a satisfactory moving video taking by using an image sensing device with a large enough pixel number even for still images.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 is a block diagram showing the configuration of a first embodiment of an electric camera according to the present invention.

[0018] FIG. 2 is a schematic diagram showing the structure of an image sensing device in the first embodiment of the electric camera of the invention.

[0019] FIG. 3 is a drive pulse timing diagram in the first embodiment of the electric camera of the invention.

[0020] FIG. 4 is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

[0021] FIG. 5 is a schematic diagram showing a readout area in the first embodiment of the electric camera of the invention.

[0022] FIG. 6 is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

[0023] FIG. 7 is a block diagram showing the configuration of a second embodiment of an electric camera according to the present invention.

[0024] FIG. 8 is a schematic diagram showing a mixing operation in the second embodiment of the electric camera of the invention.

[0025] FIG. 9 is a schematic diagram showing a readout area in the second embodiment of the electric camera of the invention.

[0026] FIG. 10 is a schematic diagram showing the structure of an image sensing device in a third embodiment of the electric camera according to the present invention.

[0027] FIG. 11 is a drive pulse timing diagram in the third embodiment of the electric camera of the invention.

[0028] FIG. 12 is a schematic diagram showing an interpolation operation in the third embodiment of the electric camera of the invention.

[0029] FIGS. 13A and 13B are schematic diagrams showing the arrangement of color filters in the image sensing device in a fourth embodiment of the electric camera according to the present invention.

DESCRIPTION OF THE EMBODIMENTS

[0030] Now embodiments of the present invention will be described by referring to the accompanying drawings. FIG. 1 is a block diagram showing the configuration of one embodiment of an electric camera according to the invention.

[0031] In FIG. 1, reference number **1** represents a lens, **2** an aperture, **3** an image sensing device, **4** a drive circuit, **5** a gain adjust circuit, **6** an analog-digital (A/D) conversion circuit, **7** a signal processing circuit, **8** a vertical interpolation circuit to perform interpolation in a vertical direction, **9** a horizontal interpolation circuit to perform interpolation in a horizontal direction, **10** a recording unit including recording media such as magnetic tape, semiconductor memory and optical disk to record a video signal, **11** a control circuit to control these constitutional elements according to the operating state, **12** an encoder circuit to modulate the video signal into a standard television signal, **13** a digital-analog (D/A) conversion circuit, **14** a mode selector switch to change over the operation mode between the moving video taking and the still image taking, **15** a record button to start or stop the recording, **16***a* and **16***b* gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and **17** an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors.

[0032] In the above configuration, light coming from the lens **1** through the aperture **2** is focused on a light receiving surface of the image sensing device **3** where it is converted into an electric signal. In this embodiment the image sensing device **3** is of a CCD type. FIG. 2 shows the structure of this image sensing device **3**. In FIG. 2, denoted **30** are pixels each formed of a photodiode, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes. Although an arbitrary number of pixels may be used, this embodiment has an array of 1200 pixels vertically and 1600 pixels horizontally. A vertical transfer unit **32** is a CCD which is driven by three phase pulses V**1**, V**2**, V**3**. This CCD has a three-gate structure in which each pixel corresponds to three phase pulses and thus can vertically transfer a signal charge of each pixel independently. Transfer gates **31** for transferring the charge of each pixel to the vertical transfer unit **32** are commonly connected to a gate of the vertical transfer unit **32** that corresponds to the V**2** pulse. An operation to transfer the charge from each pixel to the vertical transfer unit **32** in response to a peak value of the pulse applied to the commonly connected gate and an operation to transfer the charge vertically are performed separately. A horizontal transfer unit **33** horizontally transfers the charges supplied from the vertical transfer units **32** and outputs them successively through an output amplifier **34** from the output terminal.

[0033] Referring back to FIG. 1, the operation performed when the moving video mode is selected by the mode selector switch **14** will be explained. The number of vertically arranged pixels on the image sensing device in this embodiment is 1200, so if the number of effective scanning lines in the field of the NTSC system is assumed to be 240 lines, then vertically mixing five pixels (=1200 pixel rows/240 scanning lines) can match the number of lines of output signals from the image sensing device to the number of effective scanning lines.

[0034] However, in this embodiment, to realize the image stabilizing function described later, four vertically arranged pixels are mixed together during motion image taking mode. When four vertically arranged pixels are to be cyclically mixed together, the signals from the area of 960 pixels(=240 scanning lines×4 pixels) out of the 1200 vertically arranged pixels are used as effective signals and the remaining 240 pixels (=1200 (all pixels)−960 (effective pixels)) are not used for image forming. FIG. 3 shows the timing of a vertical drive pulse for the image sensing device in this operation mode, with V**1**, V**2** and V**3** representing three phase drive pulses applied to each gate of the CCD or vertical transfer unit **32**.

[0035] In FIG. 3, in a period T**1** included in the vertical blanking period, the drive pulse V**2** is held high to transfer the signal charge accumulated in each pixel to under the V**2** gate of the vertical CCD. Next, in a period T**2**, while the V**2** pulse is still at middle level, the V**3** pulse is raised from low level to middle level; next, while the V**3** pulse is at middle level, the V**2** pulse is changed from middle level to low level, after which the V**1** pulse is changed from low level to middle level; next, while the V**1** pulse is at middle level, the V**3** pulse is changed from middle level to low level, after which the V**2** pulse is changed to middle level and finally the V**1** pulse is changed from middle level to low level. With this sequence of pulse operations, the signal charges under the V**2** gate for one pixel row are transferred and held again under the V**2** gate.

[0036] By repeating this series of operations, the signal charges for a desired number of pixel rows can be transferred. In FIG. 3, during a period T**3** included in the vertical blanking period before the vertical effective scanning period (the vertical scanning period minus the vertical blanking period which corresponds to the actually displayed image) and during a period T**4** included in the vertical blanking period after the vertical effective scanning period, the above transfer operation for one pixel row is repeated a total of 240 times to transfer the signal charges of the 240 pixel rows not used for image generation to the horizontal transfer unit **33** during the vertical blanking period. For example, if this transfer operation is performed 120 times during the period T**3** and 120 times during the period T**4**, the signal charges from upper 120 pixel rows and lower 120 pixel rows on the light receiving surface are transferred to the horizontal transfer unit **33** during the period T**3** and period T**4** within the vertical blanking period. During each of the subsequent periods T**5** and T**6** in the vertical blanking period, the horizontal transfer unit **33** is driven for a predetermined period to output the charges transferred to the horizontal transfer unit **33** from the output terminal. These charges are not used as valid signals as they are output during the vertical blanking period.

[0037] Next, in the vertical effective scanning period of FIG. 3, the above one-pixel-row transfer operation is performed four times during each horizontal blanking period to transfer the signal charges of four pixel rows to the horizontal transfer unit **33** where they are mixed together. Then, during a horizontal effective scanning period (the horizontal scanning period minus the horizontal blanking period which corresponds to the actually displayed image), the horizontal transfer unit **33** is driven to read out the signal charges from the horizontal transfer unit to produce an output signal conforming to the television system. If the above operation is performed on the A field and if, on the B field, the number of pixel rows transferred during the period T**3** is set to 122 rows and that during the period T**4** is set to 118 rows, then the combination of four pixel rows to be cyclically mixed together shifts by two rows between the two fields, thus allowing the interlaced scanning to be performed as shown in FIG. 4. (FIG. 4 shows the light receiving surface of the image sensing device and its relation to the displayed screen is vertically inverted.)

[0038] Let us return to FIG. 1. The output signal from the image sensing device **3** is adjusted in gain by the gain adjust circuit **5** and then converted by the A/D conversion circuit **6** into a digital signal. The digital signal is then processed by the signal processing circuit **7** that performs color signal processing and luminance signal processing, such as generation of color signals, gamma correction, white balance processing and outline enhancement. The image sensing device in this embodiment has an array of vertical stripes of yellow (Ye), green (G) and cyan (Cy) color filters, so the color signals for Ye, G and Cy are obtained as a series of color points from one line of output signals at all times no matter how many pixels are vertically combined. From these color signals three primary color signals R, G, B can be obtained from the following calculations. R=Ye−GB=Cy−GG=G

[0039] The R, G and B signals undergoes the white balance processing and gamma correction processing in the signal processing circuit **7** and are then converted into color difference signals such as R-Y, B-Y or U and V. The luminance signals and the color difference signals are then entered through the vertical interpolation circuit **8** into the horizontal interpolation circuit **9**. In this operation state the signals just pass through the vertical interpolation circuit **8** without being processed. The horizontal interpolation circuit **9** performs interpolation on the signals in the horizontal direction.

[0040] FIG. 5 shows the light receiving surface of the image sensing device. As described above, in the operating state of this embodiment, the signals read out during the vertical effective scanning period correspond to an area having 960 of the 1200 vertically arranged pixels and a horizontal width of 1600 pixels, as shown shaded at A in FIG. 5. If the entire light receiving surface of the image sensing device has a 4-to-3 (width to height) aspect ratio, the shaded area A is more laterally elongate than this aspect ratio. Hence, if the signals of all horizontal pixels of the light receiving surface are displayed, for example, on an NTSC standard television monitor with the 4-to-3 aspect ratio, the image displayed is compressed horizontally and looks vertically elongate, compared with the original image. It is therefore necessary to output during the horizontal effective scanning period only those signals coming from a pixel area with the horizontal width conforming to the aspect ratio of the television system, as shown by a shaded area B. When the television system has an 4-to-3 aspect ratio, the number of pixels in the horizontal width of the shaded area B is 1280 (=960 (vertical effective pixels)×4/3).

[0041] Returning back to FIG. 1, the horizontal interpolation circuit **9** performs interpolation processing on the signals from the horizontal 1280 pixels to expand the signals so that they can be output over the entire horizontal effective scanning period. It also performs switching among different clocks as required. With the above operation, an area having 960 pixels in height and 1280 pixels in width is demarcated from the light receiving surface as signals conforming to the television system. Then, the luminance signal and the color difference signal are encoded by the encoder circuit **12** into television signals, which are then converted by the D/A conversion circuit **13** into analog signals for output. When the recording is specified by the record button **15**, the signals are recorded by the recording unit **10**. At this time, the signals may be compressed in the MPEG (Moving Picture Expert Group) format.

[0042] Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors **16***a*, **16***b* that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit **17**, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T**3** and T**4** in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit **9**.

[0043] The operation during the moving video mode has been described above. Next, the operation performed when the static image mode is selected by the mode selector switch **14** will be explained.

[0044] In the static image mode, too, until the recording is requested by the record button **15**, the camera outputs signals compatible with the television system to monitor the angle of view. Unlike the moving video photographing, all of the effective pixels on the image sensing device are used in this embodiment during the still image photographing to produce signals with as high a resolution as possible. Hence, during the monitoring the television signals need to be generated from the signals coming from the entire pixel area.

[0045] The image sensing device of this embodiment has 1200 vertically arranged pixels, and the number of lines of output signals from the image sensing device can be made to match the number of effective scanning lines of NTSC system, which is assumed to have 240 scanning lines, by vertically mixing five pixels (=1200/240). To make the image sensing device operate in this manner, the one-pixel-row transfer operation is performed five times during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of FIG. 3. With this operation, the signal charges of five pixel rows can be mixed by the horizontal transfer unit **33**. As for the transfer operations during the periods T**3** and T**4** in the vertical blanking period, because the interlaced scanning is carried out, only two pixel rows are transferred during the period T**3** on the B field, with no transfer operations performed in other vertical blanking periods (In this embodiment, 1200/240=5 with no remainder produced, so no further transfer is necessary; if, however, a remainder occurs, the remaining pixels need only be transferred during the periods T**3** and T**4**).

[0046] The charges mixed by the horizontal transfer unit **33** are read out by driving the horizontal transfer unit **33** during the horizontal effective scanning period. With the above operations, the signal charges of all pixels on the image sensing device can be read out in a manner conforming to the television system. The output signal from the image sensing device **3** is, as during the moving image photographing, adjusted in gain by the gain adjust circuit **5** and converted by

the A/D conversion circuit **6** into a digital signal, which is then subjected to the color signal processing and the luminance signal processing in the signal processing circuit **7** before being entered into the vertical interpolation circuit **8**. During the static image monitoring, the vertical interpolation circuit **8** performs a vertical gravity center correction on the received signals.

[0047] FIG. 6 shows combinations of pixels to be cyclically mixed on the A field and the B field and also the vertical position of the gravity center of the mixed signals. In the interlaced scanning, scanning lines of the A field and the B field are located at the centers of adjoining scanning lines on other field. Hence, the signal samplings in the camera system for the two fields must be 180 degrees out of phase in the vertical direction. In the operating state of this embodiment, however, because five pixels are mixed together, the gravity centers of the output signals for the A field and the B field are deviated 36 degrees (=½ pixel or 1/10 the line-to-line distance on the same field) from the ideal sampling phase difference of 180 degrees, as shown in FIG. 6. To correct this requires generating a signal from two adjoining output lines by interpolation. For example, if we let an nth output line on a field be Sn and an (n+1)th output line on the same field be Sn+1, then a signal Sn' obtained by calculating Sn'=(Sn×9/10)+(Sn+1×1/10) is one whose gravity center is shifted by 1/10 output line from the gravity center of the nth output line toward the (n+1)th output line. The above calculation can also be performed on the signals for the B field to correct the gravity center deviation of sampling. In this embodiment, however, to equalize the effects of interpolation of the A field and the B field, the following calculations are performed to correct the nth output line by 1/20 line toward the (n-1) line on the A field and by 1/20 line toward the (n+1)th line on the B field. A field: Sn'=(Sn×19/20)+(Sn−1×1/20)B field: Sn'=(Sn×19/20)+(Sn+1×1/20)

[0048] While this embodiment performs the interpolation based on the calculation of two adjoining lines of output signals, a greater number of lines may be used for the interpolation processing. The output signal of the vertical interpolation circuit **8** is supplied to the horizontal interpolation circuit **9**, which in this operating state does nothing but passes the signal. Then, as in the case of the moving image photographing, the signal is encoded by the encoder circuit **12** into a television signal, which is then converted by the D/A conversion circuit **13** into an analog signal for output. As described above, the television signals can be generated from all of the pixel area of the image sensing device also during the static image mode.

[0049] Next, the operation performed when the recording is requested by the record button **15** will be described. During the monitoring in the static mode, the signals are mixed together inside the image sensing device to reduce the number of signals and thereby generate television signals. During recording, however, the mixing processing is not performed and all the pixel signals need to be read out independently of each other in order to produce high resolution signals. To realize this, the one-pixel-row transfer operation is performed only once during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of FIG. 3. This causes only the signal charges for one pixel row to be transferred into the horizontal transfer unit **33**, which is then driven to read out the signal charges for one pixel row. Repeating this operation the number of times equal to the number of vertically arranged pixel rows enables the signal charges of all pixel rows to be read out independently of each other. The transfer operation is not done during the periods T**3** and T**4** in the vertical blanking period.

[0050] The signal charges thus read out are adjusted in gain by the gain adjust circuit **5** and converted by the A/D conversion circuit **6** into digital signals, which are then subjected to the color signal processing and the luminance signal processing in the signal processing circuit **7**, after which the signals are supplied through the vertical interpolation circuit **8** and the horizontal interpolation circuit **9** to the recording unit **10** where they are recorded. At this time, no interpolation processing is performed by the vertical interpolation circuit **8** or horizontal interpolation circuit **9**. The recording unit **10** may compress the signals in the JPEG (Joint Photographic Expert Group) format, for example. Because during the static image recording, no television signal can be generated, an image immediately before starting the recording or a single color image is output as the television signal for monitoring purpose. With the above operation, high resolution signals obtained from all the pixels of the image sensing device can be recorded. Although in this embodiment the recording unit is used commonly for the moving video mode and for the static image mode, dedicated recording units may be provided separately for these modes.

[0051] As explained above, since there is no limit on the number of vertically arranged pixels in this embodiment, an image sensing device with a large enough pixel number even for still images can be used to photograph highly detailed still images and satisfactory moving images.

[0052] Further, the signal mixing and the vertical signal transfer during the vertical blanking period allow the signals from the image sensing device with a large number of pixels to be read out in a manner that conforms to the television system. This in turn can reduce image quality degradation and realize the moving image photographing with an image stabilizing function and the monitoring during still image photographing.

[0053] Only the output signals from that horizontal segment which virtually corresponds to the television system's aspect ratio with respect to the vertical segment are extracted and output over the entire horizontal effective scanning period of the television system. This ensures that the output signals obtained conform to the television system's aspect ratio regardless of the extracted vertical segment position.

[0054] Further, the image sensing device is driven in such a way as to shift the position of the pixels to be cyclically mixed together every display cycle of the television system in order to output interlaced signals. With this arrangement, the interlaced scanning can be performed even when an image sensing device with a large number of pixels is used.

[0055] Further, the output signals produced by the mixing are interpolated so that the gravity centers of the output signals interlaced every display cycle have a phase difference of 180 degrees in the vertical direction. This ensures that the interlaced output signals have no deviation from the ideal 180-degree phase difference during interlacing even when an interlace phase deviation would normally occur, as when odd numbered pixels are mixed together.

[0056] In this embodiment, the image sensing device has 1200 vertically arranged pixels, and four pixels are mixed together during the moving video mode and five pixels during the static image mode. Because the area of image-stabilization pixels may or may not be used and set to any desire size, the number of pixels to be cyclically mixed together in each mode needs only to be equal to or less than the integral part of a quotient of the number of vertically arranged pixels divided by the number of television system's effective scanning lines (in the above example, 5 or less). (The number of vertically arranged pixels does not need to be divisible and, in the above example, may be more than 1200).

[0057] The number of vertically arranged pixels for static image photographing needs only to be three or more times the number of effective scanning lines on each field of the television system. In this embodiment the vertically adjoining pixels are mixed together to reduce the number of output lines from the image sensing device during the vertical effective scanning period. The number of lines of output signals can also be reduced by a so-called culling operation, by which only one line of signal charges of pixels is read out for every predetermined number of lines.

[0058] While in this embodiment the vertical transfer unit of the image sensing device is formed as a CCD that is driven by three phase pulses for each pixel, the image sensing device may have any desired structure as long as it can realize the mixing or culling of pixels that meets the above conditions.

[0059] Although this embodiment described the case of NTSC system, the invention can also be applied to other television systems, such as PAL standard, with different numbers of effective scanning lines.

[0060] In summary, a variety of constructions essentially equal in the working principle to this embodiment can be realized by the use of an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field of the television system and which allows the vertical mixing or culling of that number of pixels which is at least one of integers equal to or less than the integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device).

[0061] Next, another embodiment of the present invention will be described by referring to FIG. 7 showing the configuration of the embodiment. The configuration shown in FIG. 7 differs from that of FIG. 1 in that it has a view angle change switch **18**. In FIG. 7 constitutional elements identical with those shown in FIG. 1 are assigned like reference numbers and explanations on the constitutional elements performing the same operations as those in FIG. 1 are omitted here.

[0062] The operations of the moving video mode, the monitoring during the static image mode and the static image recording are similar in normal condition to the operations of the previous embodiment which was explained with reference to the configuration diagram of FIG. 1. An operation performed when during the moving video mode a request to change the angle of view is made by the view angle change switch **18** will be described.

[0063] In the normal condition of this embodiment, as explained in the previous embodiment, the mixing of four vertically arranged pixels, the vertical transfer during the vertical blanking period and the horizontal interpolation processing are performed to extract an area of 960 pixels in height and 1280 pixels in width from the entire pixel area to generate television signals. When a view angle change (which means a zooming function without image quality degradations in the vertical direction) is requested by the view angle change switch **18**, three vertically arranged pixels are mixed together and the signals from the excess vertically arranged pixels are read out during the vertical blanking periods before and after the vertical effective scanning period.

[0064] In this embodiment, signals of 480 pixels (=1200−240×3) or 160 lines of output signals after mixing (=480/3) need to be read out during the vertical blanking period. This allows the signals of 720 vertically arranged pixels to be read out as 240 lines of output signals conforming to the television system. To carry out this reading requires, in the pulse timing diagram of FIG. 3, transferring the signals of three pixel rows during each horizontal blanking period in the vertical effective scanning period and also transferring a total of 480 pixel rows (=160 lines of output signals) during the T**3** and T**4** periods in the vertical blanking period. The combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

[0065] The output signals of the image sensing device **3** are supplied to the gain adjust circuit **5**. Because the signal level produced as a result of the 3-pixel mixing is ¾ the signal level of the 4-pixel mixing, the again of the gain adjust circuit **5** is increased to 4/3 the gain of the 4-pixel mixing to make the 3- and 4-pixel-mixed input signal levels to the subsequent circuit equal. Then, the signals are processed by the A/D conversion circuit **6** and the signal processing circuit **7** before being supplied to the vertical interpolation circuit **8**. The combinations of pixels to be cyclically mixed on the A field and the B field and the vertical positions of the gravity centers of the mixed signals are shown in FIG. 8. As in the static image monitoring of the previous embodiment, the phase difference between the two fields is 180 degrees. Because the sampling phases of the fields are deviated from the ideal 180-degree phase difference, the vertical position of the gravity centers are corrected by the vertical interpolation circuit **8**. The amount of phase deviation in this operating state is 60 degrees (=½ pixel or ⅙ the line-to-line distance on the same field). To correct the phase deviation evenly on the both fields, the following calculations should be performed. A field: Sn'=(Sn×11/12)+(Sn−1×1/12)B field: Sn'=(Sn×11/12)+(Sn+1×1/12)

[0066] As described earlier, the interpolation processing may use three or more output lines. Next, the horizontal interpolation circuit **9** horizontally expands the signals from that horizontal segment which corresponds to the 4-to-3 aspect ratio with respect to the 720 vertically arranged pixels (i.e., signals from a horizontal 960-pixel segment (=1600×720/1200) in this operating state) so that the expanded signals can be output during the entire horizontal effective scanning period. With the above operation, an area of 720 pixels in height and 960 pixels in width can be extracted from the light receiving surface.

[0067] Next, when the view angle change is requested again by the view angle change switch **18**, two vertically arranged pixels are mixed together, an area of 480 vertically arranged pixels is read out during the vertical effective scanning period, and the horizontal interpolation circuit **9** expands the signals from the horizontal 640-pixel segment and outputs the expanded signals during the entire horizontal effective scanning period to extract an area of 480 pixels in height and 640 pixels in width. (During the two-pixel mixing, because the interlace phase deviation does not occur, the gravity center position correction by the vertical interpolation circuit **8** is not performed.) If a further view angle change is requested by the view angle change switch **18**, the operation is restored to a normal state where four vertically arranged pixels are mixed together.

[0068] As a result of the above operation, the area extracted from the light receiving surface of the image sensing device can be changed to three different areas: (A) 960 pixels high by 1280 pixels wide, (B) 720 pixels high by 960 pixels wide and (C) 4880 pixels high by 640 pixels wide. That is, the angle of view can be changed to three different angles. With the area A produced by the 4-pixel mixing taken as a reference, the area B produced by the 3-pixel mixing can provide an image enlarged by 1.33 times and the area C produced by the 2-pixel mixing can provide an image enlarged by two times. It should be noted here that because the three different areas are chosen by changing the number of pixel to be cyclically mixed together in order to make the number of the effective output lines from the imaging device agree with the number of the effective scanning lines of the television system, the angle of view can be changed while maintaining a good image with no image quality degradation in the vertical direction, when compared with an ordinary so-called digital zoom which generates effective scanning lines of signals by interpolating a small number of output lines. During the monitoring of a static image, too, it is possible to perform the similar operation of changing the angle of view by changing the number of pixel rows to be cyclically mixed together.

[0069] As described above, in addition to the advantages provided by the previous embodiment, this embodiment can also realize the view angle change with little image quality degradation even for still images by using an image sensing device with a large number of pixels and changing the number of pixels to be cyclically mixed together.

[0070] Further, because changes in signal level caused when the number of pixels to be cyclically mixed is changed are absorbed by the gain adjust means, the input signal level to the subsequent signal processing means can be kept constant.

[0071] While in this embodiment, the view angle change is performed by the view angle change switch **18**, the angle of view may be changed continuously by a zoom switch. In this case, when the magnification factor does not reach the value that is obtained by changing the pixel mixing, the digital zoom performs the ordinary interpolation processing. In this embodiment, when the magnification factor is 1 or more and less than 1.33, the 4-pixel mixing is performed; for the factor of 1.33 or more and less than 2, the 3-pixel mixing is done; and for the factor of 2 or higher, the 2-pixel mixing is carried out. The mixing operation may be interlocked with an optical zooming mechanism.

[0072] Regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, this embodiment, as in the previous embodiment, may also use an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of those numbers of pixels which are at least two of integers equal to or less than the integral part of a quotient of N divided by M. The use of this image sensing device can form a variety of constructions essentially equal in the working principle to this embodiment.

[0073] Next, a further embodiment of the present invention will be described. The overall configuration of this embodiment is similar to that of FIG. 1, except that the inner structure of the image sensing device **3** is different. The configuration of the image sensing device in this embodiment is shown in FIG. 10. In FIG. 10, denoted **30** are pixels formed of photodiodes, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in so-called vertical stripes.

[0074] In this embodiment, the image sensing device has an array of pixels measuring 864 pixels vertically and 1152 pixels horizontally. A vertical transfer unit **32** is a CCD which is driven by six phase pulses V**1**, V**2**, V**3**, V**4**, V**5**, V**6**. This CCD has a two-gate structure in which each pixel corresponds to two phase pulses and six gates corresponding to the six phase pulses are repeated for every three pixels. Transfer gates **31** for transferring the signal charge of each pixel to the vertical transfer unit **32** are commonly connected to respective gates of the vertical transfer unit **32** corresponding to the pulses V**1**, V**3**, V**5**. An operation to transfer the signal charge from each pixel to the vertical transfer unit **32** in response to peak values of pulses applied to the commonly connected gates and an operation to transfer the charge vertically are performed separately.

[0075] A horizontal transfer unit **33** horizontally transfers the charges supplied from the vertical transfer units **32** and outputs them successively through an output amplifier **34** from the output terminal. This image sensing device, unlike the one in the previous embodiment, cannot vertically transfer all pixels independently of each other, but can mix together the signal charges of three vertically adjoining pixels inside the vertical transfer unit **32** before transferring them.

[0076] First, the operation performed in this embodiment during the moving video mode will be explained. In the image sensing device of this embodiment the effective number of vertically arranged pixels is 864. If three pixels are vertically mixed, the signals of the 720 (=240×3) of the 864 vertically arranged pixels can be used as the effective signals and the remaining **144** (=864−720) pixels can be used as the image-unstability correction pixel area.

[0077] FIG. 11 shows the timings of vertical drive pulses for the image sensing device of FIG. 10 during this operation mode, with V**1**, V**2**, V**3**, V**4**, V**5**, V**6** representing the six phase drive pulses applied to the respective gates of the CCD or vertical transfer unit **32**. In FIG. 11, during a period T**1** included in the vertical blanking period, the drive pulses V**1**, V**3** and V**5** are held high to cause the signal charge of each pixel to be transferred to under the V**1**, V**3** and V**5** gates of the vertical CCD. Then, the V**2** and V**4** pulses are changed from low level to middle level to mix the charges of the adjoining three pixels. After the mixing, the V**5** pulse is changed from middle level to low level to hold the mixed signal charges under the V**1**, V**2**, V**3**, V**4** gates.

[0078] Next, a series of operations performed during a period T**2** (changing the drive pulses from middle level to low level or from low level to middle level in the order of V**1**, V**2**, V**3**, V**4**, V**5** and V**6**) causes one mixed output line (3 pixel rows) to be transferred and held again under the V**1**, V**2**, V**3**, V**4** gate. By repeating this series of operations, a desired number of output lines of mixed signal charges can be transferred.

[0079] In FIG. 11, during a period T**3** included in the vertical blanking period before the vertical effective scanning period and during a period T**4** included in the vertical blanking period after the vertical effective scanning period, the transfer operation for one output line is repeated a total of 144 times to transfer 144 output lines of signal charges not used for image forming to the horizontal transfer unit **33** at high speed during the vertical blanking periods. During subsequent periods T**5** and T**6** in the vertical blanking periods, the horizontal transfer unit **33** is driven for predetermined periods to output the signal charges transferred to the horizontal transfer unit **33** from the output terminal.

[0080] Next, in the vertical effective scanning period of FIG. 11, the one-output-signal-line transfer operation is performed during each horizontal blanking period. Then, during the horizontal effective scanning period, the horizontal transfer unit **33** is driven to read out the signal charges from the horizontal transfer unit **33**. With this operation the signal charges of three pixels mixed together can be read out in a way conforming to the television system. As shown in FIG. 11, the signals for the A field are mixed by changing the V**2** and V**4** pulses to middle level after transferring the signals from the pixels to the vertical transfer unit **32**. The signals for the B field, on the other hand, are mixed by changing the V**2** and V**6** pulses to middle level. With this mixing method, the combinations of pixels to be cyclically mixed together can be changed from one field to another, thereby realizing the interlaced scanning. The output signals from the image sensing device are processed in the similar manner to that of the previous embodiment. A vertical interpolation circuit **8** performs the gravity center correction, as in the 3-pixel mixing in the previous embodiment, and a horizontal interpolation circuit **9** performs interpolation processing to match the aspect ratio with that of the television system.

[0081] Next, the operation during the monitoring in the static image mode will be explained. It is assumed that the still image photographing is done by using all effective pixels of the image sensing device, as in the previous embodiment. The image sensing device of this embodiment has **864** vertically arranged pixels and, when 3-pixel mixing is done as in the moving video taking, the number of output lines is 288 (=864/3), which means that these signal lines cannot be read out in a manner conforming to the television system. Hence, during the monitoring in the static image mode, vertical 6-pixel mixing is performed. The 6-pixel mixing can be achieved by transferring to the horizontal transfer unit **33** in each horizontal blanking period two output lines of signal charges each of which line has been generated by vertically mixing three pixels within the vertical transfer unit **32**. The 6-pixel mixing can reduce the number of output lines from the image sensing device down to 144 (=864/6) lines. The output signals of the image sensing device that were reduced to 144 output lines are interpolated by the vertical interpolation circuit **8** to transform the 144 output lines of signals into 240 lines of signals, which conform to the television system. To generate 240 lines of signals from the 144 lines requires interpolation processing that generates five lines from three lines (144/240=3/5).

[0082] FIG. 12 shows how the interpolation is performed using two adjoining output lines. Let three output lines of the image sensing device be n, n+1 and n+2. The five output lines of signals can be generated from the following calculations. n'=nn'+1=n/2+(n+1)/2n'+2=n+1n'+3=(n+1)/2+(n+2)/2n'+4=n+2

[0083] Three or more output lines of signals may be used for interpolation processing. With the above operation, television signals can be generated by using signals of all pixels of the image sensing device also during the monitoring in the static image mode.

[0084] Next, the operation performed when the recording is requested by the record button **15** will be explained. In the recording process, the mixing processing is not performed and signals of all pixels need to be read independently of each other in order to obtain high-resolution signals. To realize this, the aperture **2** is first closed and then, during the period T**2** in the pulse timing diagram of FIG. 11, only the V**1** pulse is raised to high level to transfer the signal charge of only the pixel adjacent to the V**1** gate to the vertical transfer unit **32**. Then, the vertical transfer unit **32** and the horizontal transfer unit **33** are successively driven to read out the signal charges. Similarly, the V**3** pulse is raised to high level to read the signal charge of the pixel adjacent to the V**3** gate, followed by raising the V**5** pulse to high level to read the signal charge of the pixel adjacent to the V**5** gate. With the above processing, the signal charges of all pixels can be read out independently in three successive operations. The signal charges thus read out are recorded in the recording unit **10**. At this time, they are rearranged properly to reconstruct the pixel arrangement on the light receiving surface of the image sensing device.

[0085] As described above, this embodiment offers the following advantages. If the number of vertically arranged pixels is not an integral multiple of the number of scanning lines of the television system, the signals conforming to the television system can be generated from the whole area of effective pixels by performing the pixel mixing and the vertical interpolation.

[0086] In this embodiment, as in the previous embodiment, regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, a variety of constructions essentially equal in the working principle to this embodiment can be realized by using an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of that number of pixels which is greater by at least one than the integral part of a quotient of N divided by M.

[0087] Next, a further embodiment of the present invention will be explained. This embodiment differs from the previous embodiments in that the image sensing device have different arrangements of color filters. FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals. FIG. 13A shows a color filter arrangement on the image sensing device in which white filters (W=passing all colors) are used instead of the green (G) filters used in the previous embodiment. The R, G, B signals can be obtained by the following calculations.
R=W−CyG=Ye+Cy−WB=W−Ye

[0088] When this color filter arrangement is used, a higher sensitivity can be obtained than the color filter arrangement of the previous embodiment. FIG. 13B show a color filter arrangement that uses, in stead of complementary colors, color filters that pass the primary colors R, G, B. This color filter arrangement can directly produce the primary color signals, R, G, B and can provide a camera with good color purity and good color S/N.

[0089] With the above color filter arrangements, it is possible to produce color signals corresponding to the three kinds of color filters from each line of output signals at all times no matter how many pixels are vertically mixed or culled. Therefore, color signals conforming to the television system can be generated easily.

Original

Classifications

IPC	CPC	US Class	ECLA	ICO
G02B5/20	H04N5/23248	348/294	H04N5/232S2B1	T04N5:232S1B
H04N5/335	H04N5/23258	348/273	H04N5/232S	T04N5:232S2B1
G06T1/00	H04N5/23274	348/312	H04N5/232S1B	
H01L27/14	H04N9/045	348/322	H04N9/04B	
H01L27/148	H04N5/23293			
H04N5/225	H04N5/372			
H04N5/232	H04N5/3741			
H04N5/341	H04N9/04515			
H04N5/343	H04N9/04555			
H04N5/345	H04N9/04557			
H04N5/347	H04N2209/045			
H04N5/351				
H04N5/369				
H04N5/372				
H04N5/3728				
H04N5/378				
H04N9/04				
H04N9/07				

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Legal information

Status

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Ownership

Date from	Date to	Name	Standardized	Normalized
2017-10-01		MAXELL, LTD.	MAXELL	
2014-08-26	2017-10-01	HITACHI MAXELL, LTD.	HITACHI MAXELL	HITACHI MAXELL
2013-06-07	2014-08-26	HITACHI CONSUMER ELECTRONICS CO., LTD.	HITACHI CONSUMER ELECTRONICS	HITACHI
2000-01-11	2013-06-07	HITACHI, LTD.	HITACHI	HITACHI
2000-01-11	2014-08-26	HITACHI CONSUMER ELECTRONICS CO., LTD.	HITACHI CONSUMER ELECTRONICS	HITACHI
2000-01-11	2014-08-26	HITACHI CONSUMER ELECTRONICS CO, LTD.	HITACHI CONSUMER ELECTRONICS	HITACHI

Payment status

Date	Payment status	Description
2016-06-09	Fee paid	PAYMENT OF MAINTENANCE FEE, 4TH YEAR, LARGE ENTITY.

Litigation

Date	Docket number	Comments	Judgement
2020-03-17	IPR2020-00597	Apple Inc. </br> V. MAXELL, LTD. </br>, Filed March 17, 2020, Trial. No. IPR2020-00597	
2019-03-15	5:19cv36	Maxell Ltd. V. Apple Inc, Filed March 15, 2019, D.C. E.D. Texas, Doc. No. 5:19cv36	
2018-06-20	IPR2018-00904	Olympus Corporation Et Al V. Maxell, Ltd., Filed June 20, 2018, Trial. No. IPR2018-00904	

2016-11-18	5:16cv179	Hitachi Maxell, Ltd. v. Zte Corporation et al, Filed November 18, 2016, D.C. E.D. Texas, Doc. No. 5:16cv179	ORDER OF DISMISSAL. It is ORDERED that all claims of Plaintiff against Defendant are hereby DISMISSED WITH PREJUDICE. It is further ORDERED that all counterclaims of Defendant against Plaintiff are hereby DISMISSED WITH PREJUDICE. All motions by either party not previously ruled on are hereby DENIED. Each party shall bear its own costs in connection herewith. Signed by District Judge Robert W. Schroeder, III on 3/12/2019. (slo,)

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Docket number	Docket description	Court	Date Filed
IPR2020-00597	Apple Inc. Vs. Maxell, Ltd.	Patent Trial and Appeal Board	2020-03-16
20-115	In re: Apple Inc.	Federal Circuit Court of Appeals	2020-01-30
20-111	In re: Apple Inc.	Federal Circuit Court of Appeals	2020-01-02
5:19cv36	Maxell Ltd. V. Apple Inc	Texas Eastern District Court	2019-03-14
5:16cv179	Maxell, Ltd. V. Zte Corporation Et Al	Texas Eastern District Court	2016-11-17
IPR2018-00904	Olympus Corporation Vs. Maxell Ltd.	Patent Trial and Appeal Board	2018-06-19
IPR2018-00236	ZTE Corporation Vs. Maxell, Ltd.	Patent Trial and Appeal Board	2017-11-21

Page: 1

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Citation type	Publication number	Citation relevance	Citation origin	Publication date	Title	Original standardized assignee
backward	US4054915A		By other than the examiner	1977-10-18		
backward	US5170249A		By other than the examiner	1992-12-08		
backward	US5187569A		By other than the examiner	1993-02-16		
backward	US5828406A		By other than the examiner	1998-10-27		
backward	US5847758A		Cited by the examiner	1998-12-08		
backward	US6195125B1		By other than the examiner	2001-02-27		
backward	US6519000B1		Cited by the examiner	2003-02-11		

☐	backward	US6661451B1	By other than the examiner	2003-12-09	
☐	backward	US6765616B1	Cited by the examiner	2004-07-20	
☐	backward	US6906746B2	Cited by the examiner	2005-06-14	
☐	backward	US7154539B1	By other than the examiner	2006-12-26	
☐	backward	US7403226B2	By other than the examiner	2008-07-22	
☐	backward	JP04323973A	By other than the examiner	1992-11-13	
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☐	backward	JP11187306A	By other than the examiner	1999-07-09	
☐	backward	JP11355665A	By other than the examiner	1999-12-24	

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Similar documents

The similarity check is done by matching this document to all documents in the database. Only the title and abstract text are matched, resulting in a score.

Camera device

Publication number CN1195375C
Publication date 2005-03-30
Application date 2002-09-09

An imaging apparatus includes a solid-state imaging device for generating an image signal. The solid-state imaging device includes light receiving pixels for accumulating information charges. Vertical shift registers transfer the information charges accumulated in the light receiving pixels when receiving a cyclic vertical drive signal. A horizontal shift register outputs the information charges received from the vertical shift registers when receiving a horizontal drive signal. Unnecessary charges stored in the horizontal shift register are drained during at least part of a period in which the output of the image signal is interrupted and the output interruption period is relatively long to prevent the image quality from deteriorating.

Driving method for liquid crystal display device

Publication number TW525128B
Publication date 2003-03-21
Application date 2000-06-01

A kind of liquid crystal display (LCD) device is disclosed in the present invention. In particular, the invention is related to the LCD device that is capable of displaying input display data corresponding to multiple scans without having quality deterioration and having the need of complex circuit. To prevent from displaying doubly even when the pixel number of the input display data is smaller than the display pixel number of LCD panel, the interface circuit of LCD device is provided with the followings: a counter for counting the pixel-number N of the display data inputted during one horizontal period; a lateral pixel constant number generating circuit

for generating a constant number M of pixels in a lateral direction of LCD panel; a subtracting circuit for calculating a difference of (N-M); a pixels-number conversion circuit for converting the pixel-number N to the number M (M > N); and a clock frequency multiplying circuit for multiplying a frequency CL of the clock signal inputted from the computer itself with a natural number A (equal to or greater than 2). When using the clock frequency multiplying-circuit to multiply the clock signal frequency with the number A so as to convert N pixel data into M (M > N), the pixel data and clock signals of frequency A*CL are transferred to a drain driver as the quotient obtained from dividing M by N is equal to A. When the quotient obtained from dividing M by N is not equal to an integer number, the pixel data and the clock signal of frequency CL are transferred to the drain driver. In addition, on scanning the remaining (M-N) pixels of LCD panel, clock signal of frequency A*CL is transferred to the drain driver. When the quotient obtained from dividing M by N is not equal to an integer number and M is larger than (A*N), clock signal of frequency A*CL and black display data are transferred to the drain driver to drive the LCD device.

Camera device

Publication number	CN1409550A
Publication date	2003-04-09
Application date	2002-09-09

The patent refers to the field of 'pictorial communication,'. An imaging apparatus includes a solid-state imaging device for generating an image signal. The solid-state imaging device includes light receiving pixels for accumulating information charges. Vertical shift registers transfer the information charges accumulated in the light receiving pixels when receiving a cyclic vertical drive signal. A horizontal shift register outputs the information charges received from the vertical shift registers when receiving a horizontal drive signal. Unnecessary charges stored in the horizontal shift register are drained during at least part of a period in which the output of the image signal is interrupted and the output interruption period is relatively long to prevent the image quality from deteriorating.

SMEAR REDUCTION IN SOLID STATE TELEVISION CAMERA

Publication number	CA1187168A1
Publication date	1985-05-14
Application date	1982-07-14

A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows and for sequentially generating a signal corresponding to an image by transferring a charge generated by the light sensing units is disclosed, which includes a synchronizing signal generator for generating horizontal and vertical synchronizing signals, a clock pulse generator for generating a clock pulse corresponding to the horizontal synchronizing signal and controlling the sequential transfer of the number of the clock pulse being equal to the sum of the number of the horizontal rows and a predetermined number, a detecting circuit for detecting the signal during the period of the predetermined number of the clock pulse, the period being after the signal corresponding to the image is obtained and a part of a vertical blanking period, a compensating signal generator supplied with the output of the detecting circuit and for generating a compensating signal, and a compensating circuit for removing the undesirable signal based on the charge mixed to the charge representing the image during the transfer of the latter charge by using the compensating signal.

Method of driving EL display device

Publication number	KR100812286B1
Publication date	2008-03-04
Application date	2001-09-04

An EL display device comprising a plurality of pixels (404), the pixels comprising EL elements (407), a plurality of source signal lines, a source signal line drive circuit (601), a first gate signal line drive circuit (605), and a second gate signal line drive circuit, wherein the source signal line drive circuit is configured to output any one bit of digital video signal among n bit of digital video signals to each of the plurality of source signal lines in each of (n + m) display periods in one frame period, with n and m being natural numbers, wherein the digital video signals are input from the plurality of source signal lines by inputting a first gate signal, light emitting or non-light emitting of the EL elements is selected by the digital video signals, the EL elements do not emit light when a second gate signal is input in the plurality of pixels, wherein the plurality of pixels are disposed in a matrix form, wherein the first gate signal line drive circuit is configured to input the first gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input the second gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input a second gate signal to a row of the plurality of pixels different from the p row to set the display period shorter than a period necessary to input the digital video signals to all the plurality of pixels while the first gate signal line drive circuit is configured to input the first gate signal to p row of the plurality of pixels, p being a natural number, in at least one display period of the (n + m) display periods, wherein n bit of digital video signals which the source signal line drive circuit inputs corresponds to i th n bit of digital video signals, with i being a natural number, n or less in k with k being a natural number, more than 2 or more and (n + m)or less display periods of the display periods (n + m), and wherein k display periods does not continue,

and the digital video signals which the source signal line drive circuit output correspond to j th n bit of digital video signals, with j being different from i, and natural number, n or less, in a display period between the k display periods.

Method of driving EL display device and EL display device

Publication number	EP1970884A3
Publication date	2008-09-24
Application date	2001-09-04

An EL display device comprising a plurality of pixels (404), the pixels comprising EL elements (407), a plurality of source signal lines, a source signal line drive circuit (601), a first gate signal line drive circuit (605), and a second gate signal line drive circuit, wherein the source signal line drive circuit is configured to output any one bit of digital video signal among n bit of digital video signals to each of the plurality of source signal lines in each of (n + m) display periods in one frame period, with n and m being natural numbers, wherein the digital video signals are input from the plurality of source signal lines by inputting a first gate signal, light emitting or non-light emitting of the EL elements is selected by the digital video signals, the EL elements do not emit light when a second gate signal is input in the plurality of pixels, wherein the plurality of pixels are disposed in a matrix form, wherein the first gate signal line drive circuit is configured to input the first gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input the second gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input a second gate signal to a row of the plurality of pixels different from the p row to set the display period shorter than a period necessary to input the digital video signals to all the plurality of pixels while the first gate signal line drive circuit is configured to input the first gate signal to p row of the plurality of pixels, p being a natural number, in at least one display period of the (n + m) display periods, wherein n bit of digital video signals which the source signal line drive circuit inputs corresponds to ith n bit of digital video signals, with i being a natural number, n or less in k with k being a natural number, more than 2 or more and (n + m)or less display periods of the display periods (n + m), and wherein k display periods does not continue, and the digital video signals which the source signal line drive circuit output correspond to jth n bit of digital video signals, with j being different from i, and natural number, n or less, in a display period between the k display periods.

Method of driving EL display device and EL display device

Publication number	EP1970884A2
Publication date	2008-09-17
Application date	2001-09-04

An EL display device comprising a plurality of pixels (404), the pixels comprising EL elements (407), a plurality of source signal lines, a source signal line drive circuit (601), a first gate signal line drive circuit (605), and a second gate signal line drive circuit, wherein the source signal line drive circuit is configured to output any one bit of digital video signal among n bit of digital video signals to each of the plurality of source signal lines in each of (n + m) display periods in one frame period, with n and m being natural numbers, wherein the digital video signals are input from the plurality of source signal lines by inputting a first gate signal, light emitting or non-light emitting of the EL elements is selected by the digital video signals, the EL elements do not emit light when a second gate signal is input in the plurality of pixels, wherein the plurality of pixels are disposed in a matrix form, wherein the first gate signal line drive circuit is configured to input the first gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input the second gate signal to each row of the plurality of pixels in turn, wherein the second gate signal line drive circuit is configured to input a second gate signal to a row of the plurality of pixels different from the p row to set the display period shorter than a period necessary to input the digital video signals to all the plurality of pixels while the first gate signal line drive circuit is configured to input the first gate signal to p row of the plurality of pixels, p being a natural number, in at least one display period of the (n + m) display periods, wherein n bit of digital video signals which the source signal line drive circuit inputs corresponds to ith n bit of digital video signals, with i being a natural number, n or less in k with k being a natural number, more than 2 or more and (n + m)or less display periods of the display periods (n + m), and wherein k display periods does not continue, and the digital video signals which the source signal line drive circuit output correspond to jth n bit of digital video signals, with j being different from i, and natural number, n or less, in a display period between the k display periods.

sOLID BODY - tELEVISION CAMERA

Publication number	DE3227110C2
Publication date	1990-07-05
Application date	1982-07-20

A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows and for sequentially generating a signal corresponding to an image by transferring a charge generated by the light sensing units is disclosed, which includes a synchronizing signal generator for generating horizontal and vertical synchronizing signals, a clock pulse generator for generating a clock pulse corresponding to the horizontal synchronizing signal and controlling the sequential transfer of the charge representing one horizontal line of the image, the number of the clock

pulses being equal to the sum of the number of the horizontal rows and a predetermined number, a detecting circuit for detecting the signal during the period of the predetermined number of the clock pulse, the period being after the signal corresponding to the image is obtained and a part of a vertical blanking period, a compensating signal generator supplied with the output of the detecting circuit and for generating a compensating signal, and a compensating circuit for removing the undesirable signal based on the charge mixed to the charge representing the image during the transfer of the latter charge by using the compensating signal.

sOLID BODY - tELEVISION CAMERA

Publication number	DE3227110A1
Publication date	1983-02-24
Application date	1982-07-20

A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows and for sequentially generating a signal corresponding to an image by transferring a charge generated by the light sensing units is disclosed, which includes a synchronizing signal generator for generating horizontal and vertical synchronizing signals, a clock pulse generator for generating a clock pulse corresponding to the horizontal synchronizing signal and controlling the sequential transfer of the charge representing one horizontal line of the image, the number of the clock pulses being equal to the sum of the number of the horizontal rows and a predetermined number, a detecting circuit for detecting the signal during the period of the predetermined number of the clock pulse, the period being after the signal corresponding to the image is obtained and a part of a vertical blanking period, a compensating signal generator supplied with the output of the detecting circuit and for generating a compensating signal, and a compensating circuit for removing the undesirable signal based on the charge mixed to the charge representing the image during the transfer of the latter charge by using the compensating signal.

TELEVISION CAMERA AT THE SOLID STATE

Publication number	FR2509942B1
Publication date	1985-04-26
Application date	1982-07-20

A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows and for sequentially generating a signal corresponding to an image by transferring a charge generated by the light sensing units is disclosed, which includes a synchronizing signal generator for generating horizontal and vertical synchronizing signals, a clock pulse generator for generating a clock pulse corresponding to the horizontal synchronizing signal and controlling the sequential transfer of the charge representing one horizontal line of the image, the number of the clock pulses being equal to the sum of the number of the horizontal rows and a predetermined number, a detecting circuit for detecting the signal during the period of the predetermined number of the clock pulse, the period being after the signal corresponding to the image is obtained and a part of a vertical blanking period, a compensating signal generator supplied with the output of the detecting circuit and for generating a compensating signal, and a compensating circuit for removing the undesirable signal based on the charge mixed to the charge representing the image during the transfer of the latter charge by using the compensating signal.



User Name: Renee Preston
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Document (1)

1. *Maxell Ltd. v. Huawei Device USA Inc., 297 F. Supp. 3d 668*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Cases	-None-

Caution
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Maxell Ltd. v. Huawei Device USA Inc.

United States District Court for the Eastern District of Texas, Texarkana Division

January 31, 2018, Decided; January 31, 2018, Filed

CIVIL ACTION NO. 5:16-CV-00178-RWS LEAD CASE; CIVIL ACTION NO. 5:16-CV-00179-RWS

Reporter
297 F. Supp. 3d 668 *; 2018 U.S. Dist. LEXIS 100245 **

MAXELL LTD., Plaintiff, v. HUAWEI DEVICE USA INC, HUAWEI DEVICE CO., LTD., Defendants.MAXELL LTD., Plaintiff, v. ZTE CORPORATION, ZTE USA INC., Defendants.

Subsequent History: Later proceeding at *Maxell Ltd. v. Huawei Device United States, 2018 U.S. Dist. LEXIS 56142 (E.D. Tex., Mar. 19, 2018)*

Later proceeding at *Maxell, Ltd. v. Huawei Device USA, Inc., 2018 U.S. Dist. LEXIS 56143 (E.D. Tex., Mar. 19, 2018)*

Motion denied by *Maxell Ltd. v. Huawei Device USA Inc., 2018 U.S. Dist. LEXIS 235718 (E.D. Tex., Mar. 29, 2018)*

Motion granted by *Maxell, Ltd. v. ZTE Corp., 2018 U.S. Dist. LEXIS 227608 (E.D. Tex., June 15, 2018)*

Core Terms

specification, encoding, contends, pictures, Patent, calculation, signal, reliability, cellular, corresponding, detecting, display, switching, pixels, output, memory, recited, decoding, apparatus, embodiment, algorithm, interface, mobile, ordinary meaning, compression, positioning, wait, proposed construction, processing, combining

Counsel: **[**1]** David Folsom, Mediator (5:16cv179), Pro se, Texarkana, TX USA.

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For Zte USA Inc., Zte USA Inc., Consol Defendants (5:16cv178): Steven Arthur Moore, LEAD ATTORNEY, Callie McCarthy Bjurstrom, Cheng "Jack&quo C Ko, Howard Neil Wisnia, Matthew Robert Stephens, Nicole Sara Cunningham, Sara Jean O'Connell, Sara Jean O'Connell, Pillsbury Winthrop **[**4]** Shaw Pittman LLP - San Diego, San Diego, CA USA; Eric Hugh Findlay, Findlay Craft PC, Tyler, TX USA.

For Huawei Device USA Inc, Huawei Device Co., Ltd., Counter Claimants (5:16cv178): Stanley Young, LEAD ATTORNEY, Covington & Burling LLP - Redwood Shores, Redwood Shores, CA USA.

For Huawei Device USA Inc, Huawei Device Co., Ltd., Counter Claimant (5:16cv178): Stanley Young, LEAD ATTORNEY, Covington & Burling LLP - Redwood Shores, Redwood Shores, CA USA; Jennifer Parker Ainsworth, Wilson Robertson & Cornelius PC, Tyler, TX USA; KD Shull, Huawei Technologies USA Inc, Plano, TX USA.

For Hitachi Maxell, Ltd., Counter Defendant (5:16cv178): Jamie B Beaber, William Justin Barrow, LEAD ATTORNEYS, Alan M Grimaldi, Alison T Gelsleichter, Baldine Brunel Paul, Bryan Christopher Nese, Clark S Bakewell, James A Fussell, III, Justin Park, Kfir B Levy, Michael T. Lindinger, Saqib Javaid Siddiqui, Tiffany A Miller, Tyler J. Earnest, Mayer Brown, LLP - DC, Washington, DC USA; Amanda Streff Bonner, Robert Gary Pluta, Mayer Brown LLP - Chicago, Chicago, IL USA; Geoffrey Patton Culbertson, Patton Tidwell & Culbertson, LLP - Texarkana, Texarkana, TX USA.

Judges: ROBERT W. SCHROEDER III, UNITED STATES DISTRICT JUDGE. **[**5]**

Opinion by: ROBERT W. SCHROEDER III

Opinion

[*677] CLAIM CONSTRUCTION MEMORANDUM AND ORDER

On November 29, 2017, the Court held an oral hearing to determine the proper construction of the disputed claim terms of the patents-in-suit. Having considered the parties claim-construction briefing and based on the intrinsic and extrinsic evidence, the Court construes the disputed terms in this Memorandum and Order as detailed below. *See Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005)*; *Teva Pharms. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 190 L. Ed. 2d 719 (2015)*.

BACKGROUND

On November 18, 2016, Plaintiff Maxell, Ltd. ("Maxell") filed suit against Defendants Huawei Device USA Inc., Huawei Device Co., Ltd. (collectively "Huawei") and ZTE USA Inc. ("ZTE"). Plaintiff Maxell, Ltd. ("Maxell") has asserted fifteen patents in this consolidated action:[1]

- U.S. Patent No. 5,396,443 ("'443 Patent"), which is asserted against both Huawei and ZTE USA;
- U.S. Patent Nos. 7,509,139 ("'139 Patent"); 6,754,440 ("'440 Patent"); 6,928,292 ("'292 Patent"); 7,203,517 ("'517 Patent"); 7,671,901 ("'901 Patent"); 6,856,760 ("'760 Patent"); and 7,116,438 ("'438 Patent"), which are asserted against Huawei; and
- U.S. Patent Nos. 6,748,317 ("'317 Patent"); ***8,339,493*** ("'493 Patent"); 8,736,729 ("'729 Patent"); 6,408,193 ("'193 Patent"); 6,329,794 ("'794 Patent"); 6,816,491 ("'491 Patent"); and 8,098,695 ("'695 Patent"), which are asserted against ZTE USA.

On November 29, 2017, the Court held a *Markman* hearing on the disputed claim terms of the patents-in-suit. Docket Nos. 118, 138. At the hearing, Maxell and Huawei agreed to the construction of the sole disputed terms in the '901 Patent and '438 Patent. Docket No. 138 (H'rg Tr.) at 101:8-10.

APPLICABLE LAW

"It is a 'bedrock principle' of patent law that 'the claims of a patent define **[**6]** the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005)* (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004)*). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id. at 1313-14*; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc., 262 F.3d 1258, 1267 (Fed. Cir. 2001)*. Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips, 415 F.3d at 1312-13*; *Bell Atl. Network Servs., 262 F.3d at 1267*. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips, 415 F.3d at 1312-13*; *Alloc, Inc. v. Int'l Trade Comm'n, 342 F.3d 1361, 1368 (Fed. Cir. 2003)*.

[*678] Claim language guides the Court's construction of claim terms. *Phillips, 415 F.3d at 1314*. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* (quoting *Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995)*). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996)*); *Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1325 (Fed. Cir. 2002)*. In the specification, a patentee may define his own **[**7]** terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips, 415 F.3d at 1316*. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1343-44 (Fed. Cir. 2001)*. This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp., 383 F.3d 1295, 1301 (Fed. Cir. 2004)*.

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc., 299 F.3d at 1325*. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.'" *Globetrotter Software, Inc. v. Elan Computer Group, Inc., 362 F.3d 1367, 1381 (Fed. Cir. 2004)* (quoting *Vitronics Corp., 90 F.3d at 1583*). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1571 (Fed. Cir. 1988)*; *see also Phillips, 415 F.3d at 1323*.

[1] The Court consolidated the case against Huawei (Case No. 5:16-cv-178) with the case against ZTE (Case No. 5:16-cv-179) for pretrial purposes.

"A district court's construction of a patent claim, like a district court's interpretation of a written instrument, often requires the judge only to examine and to construe the document's words without requiring the judge **[**8]** to resolve any underlying factual disputes." *Teva Pharms. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 840-41, 190 L. Ed. 2d 719 (2015)*. For certain terms, however, the Court may "need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Id. at 841*. "In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factfindings about that extrinsic evidence." *Id.*

Although extrinsic evidence is useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips, 415 F.3d at 1317* (quoting *C.R. Bard, Inc., 388 F.3d at 862*) (internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions **[*679]** that are too broad or may not be indicative of how the term is used in the patent. *Id. at 1318*. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition **[**9]** are not useful. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

A. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc., 758 F.3d 1362, 1365 (Fed. Cir. 2014)* (quoting *Thorner v. Sony Computer Entm't Am. LLC, 669 F.3d 1362, 1365 (Fed. Cir. 2012)*); *see also GE Lighting Solutions, LLC v. AgiLight, Inc., 750 F.3d 1304, 1309 (Fed. Cir. 2014)* ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions, 750 F.3d at 1309*.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner, 669 F.3d at 1365*); *see also Renishaw, 158 F.3d at 1249*. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw, 158 F.3d at 1249*.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to **[**10]** a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp., 561 F.3d 1319, 1329 (Fed. Cir. 2009)*; *see also Thorner, 669 F.3d at 1366* ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp., 725 F.3d 1315, 1326 (Fed. Cir. 2013)*.

B. Functional Claiming and *35 U.S.C. § 112, ¶ 6* (pre-AIA) / *§ 112(f)* (AIA)

A patent claim may be expressed using functional language. *See 35 U.S.C. § 112, ¶ 6*; *Williamson v. Citrix Online, LLC, 792 F.3d 1339, 1347-49 & n.3 (Fed. Cir. 2015)* (en banc in relevant portion). *Section 112, Paragraph 6*, provides that a structure may be claimed as a "means . . . for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States, 303 F.3d 1316, 1326 (Fed. Cir. 2002)*.

But *§ 112, ¶ 6* does not apply to all functional claim language. There is a rebuttable presumption that *§ 112, ¶ 6* applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp., 303 F.3d at 1326*; *Williamson, 792 F.3d at 1348*. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional **[*680]** language, in the context of the entire specification, to denote sufficiently **[**11]** definite

structure or acts for performing the function. *See* Media Rights Techs., Inc. v. Capital One Fin. Corp., 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (internal quotation marks omitted) (citing Williamson, 792 F.3d at 1349; Robert Bosch, LLC v. Snap-On Inc., 769 F.3d 1094, 1099 (Fed. Cir. 2014))); Williamson, 792 F.3d at 1349 ("Section 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); Personalized Media Communications, L.L.C. v. Int'l Trade Commission, 161 F.3d 696, 704 (Fed. Cir. 1998) ("'[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format' even if the claim uses the term 'means'")

When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." Williamson, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step . . . is a determination of the function of the means-plus-function limitation." Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc., 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification **[**12]** is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc., 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." Micro Chem., Inc. v. Great Plains Chem. Co., 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech., 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. "A claim is invalid for **[**13]** indefiniteness if its language, when read in light of the specification and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.'" Biosig Instruments, Inc. v. Nautilus, Inc., 783 F.3d 1374, 1377 (Fed. Cir. 2015) (quoting Nautilus, Inc. v. Biosig Instruments, Inc., 572 U.S. 898, 134 S. Ct. 2120, 2124, 189 L. Ed. 2d 37 (2014)). Whether a claim is indefinite is determined from the perspective **[*681]** of one of ordinary skill in the art as of the time the application for the patent was filed. Nautilus, 134 S. Ct. at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." ePlus, Inc. v. Lawson Software, Inc., 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." Biosig Instruments, Inc. v. Nautilus, Inc., 783 F.3d at 1378 (internal quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [limitation]." Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord* Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing Datamize, 417 F.3d at 1351).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. Williamson, 792 F.3d at 1351-52. The disclosure is inadequate **[**14]** when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with

the corresponding function in the claim." *Id. at 1352*.

AGREED TERMS

Before the *Markman* hearing, the parties agreed to construction the following terms:

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[*686]

Docket No. 115-2 at B-1-B-14.

At the oral hearing the parties also agreed to the constructions of the following terms:

[*687]

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H'rg Tr. at 6:7-10, 111:19-112:6.

DISPUTED TERMS

A. The '139 Patent

The '139 Patent relates generally to wireless communication **[**24]** systems, more specifically to methods for selecting, from multiple base stations within a wireless system, one base station for communication with a terminal. The Abstract of the '139 Patent recites:

> When one base station to which a terminal is to connect is determined from a plurality of base stations in a wireless communication system, the best base station is selected according to the communication quality or the content of communication services. In the wireless communication system, the plurality of base stations are classified into a plurality of groups. Indexes of communication quality between the base stations and the terminal are obtained and, for each group, the characterizing quantities of **[*688]** the indexes of communication quality are calculated. The base station group with which the terminal is to communicate is specified based on the characterizing quantities. One of the base stations in the specified group is determined as a communication destination base station.

'139 Patent Abstract. More particularly, the '139 Patent describes a wireless communication system in which a plurality of base stations are classified into a plurality of groups, and a method for selecting one of the plurality of base stations to **[**25]** connect to a terminal based on calculated characterized quantities of communication quality for each group. As shown in Figure 1, the method described in the '139 Patent obtains an index of communication quality (e.g., a received power, bit rate or signal-to-noise ratio) for each base station (step 102), calculates a group score (e.g., a total power or average power) for each group of base stations (step 103), specifies one of the groups based on the group score (step 104), and selects one of base stations in the specified group to establish a connection (step 105). In one example, the group with the largest total power is specified and a base station within that group is selected to connect to a wireless terminal. *See*, '139 Patent 2:37-64, 4:45-5:12, Figure 1.

2. "a storage unit in which group information generated by classifying the plurality of base stations into groups" ('139 Patent claim 11)[2]

Go to table3

Huawei contends that the claim language contains "an obvious grammatical error that renders the term **[**26]** indefinite because one of skill in the art would be unable to determine with reasonable certainty which of (at least) two possible corrections to make." Docket No. 100 at 9. Huawei advances two possible corrections: adding to the end of the claim (1) the phrase "is stored" or (2) the phrase "is stored in RAM." *Id.* Adding "is stored" to the end of the claim would "mean that the storage unit could be, for example, RAM (Random Access Memory; memory that can be rewritten) or ROM (Read Only Memory; memory that cannot be rewritten)." *Id.* (citing Docket No. 100-1 (Akl. Decl.) at ¶¶ 173-75, 186-188. Alternatively, according to Huawei, adding "is stored in RAM" is another reasonable correction, as it would "correct the claim to cover the preferred, indeed the only disclosed, embodiment." *Id.* (citing Akl. Decl. at ¶ 187-90).

In response, Maxell agrees that the claim language contains a "clear typographical error" and requests that the Court correct the error in this claim by adding "is stored" at the end of the claim term. H'rg Tr. at 9:3-11;

[2] The term numbers used herein are consistent with the term numbers provided in the parties Joint Claim Construction chart and used in the oral hearing. Docket No. 115-1.

Docket No. 106 at 11. Maxell notes that it has sought this correction at the USPTO via a Certificate of Correction. *Id.* Maxell identifies two reasons that **[**27]** it believes defeat Huawei's argument that two corrections are possible.

First, according to Maxell, adding "is stored" would encompass the embodiment in the specification that discloses RAM and Huawei or Dr. Akl have not provided any evidence that the claim should be limited **[*689]** to the RAM embodiment. *Id.* (citing Docket No. 106-7 (Vojcic Decl.) at ¶ 34).

Second, Maxell contends that "claim 11 is an apparatus claim and [the] applicant indicated its intent to broadly encompass different types of memory by using 'storage unit.'" *Id.* (citing '139 Patent 11:6). Maxell contends that if the applicant wanted to limit the claim to RAM, it would have recited a RAM storage unit instead of broadly reciting "storage unit." *Id.* (citing Vojcic Decl. at ¶ 36). Maxell argues that "[t]he correction is being made to the functional recitation of the claim, and a person of ordinary skill in the art would not consider adding 'in RAM' to the functional part of the claim because it is clear that the structure is already defined by 'storage unit,' and the latter part of the claim term is simply describing information that ***is stored*** in the already claimed storage unit." *Id.* at 11-12 (citing Vojcic Decl. at ¶ 36) (emphasis original).

The **[**28]** definiteness standard of *35 U.S.C. § 112, ¶ 2* requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, 134 S. Ct. at 2129-30. The parties both agree that as drafted the claim contains an error. The Federal Circuit has held that a district court can "act to correct an error in a patent by interpretation of a patent where no certification of correction has been issued . . . only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1354 (Fed. Cir. 2003)*. If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1371 (Fed. Cir. 2014)* (citing *Nautilus, Inc., 134 S.Ct. at 2130, n.8 (2014)*).

The Court construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying **[**29]** the plurality of base stations into groups is stored." The correction of "is stored" is not subject to reasonable debate based on the claim language and the specification. In effect, Huawei seeks to limit "a storage unit" to "a RAM storage unit" but has pointed to no lexicography, disclaimer or disavowal in the intrinsic record indicating that the term "storage unit" should be so limited. Even Huawei's own expert states that one skilled in the art would recognize that "storage unit" is a term that is not limited to RAM but inclusive of multiple types of memory. *See* Akl Decl. at ¶¶ 173-79. And Maxell's expert agrees. *See* Vojcic Decl. at ¶ 32 ("One of ordinary skill in the art would understand that the function of the "storage unit" is to store and therefore this correction would be the only logical correction to make."). Given that one skilled in the art would recognize that the "a storage unit" for storing "group information generated by classifying the plurality of base stations into groups" would not be limited to RAM, the Court finds it unreasonable to read in a limitation at the end of the claim term that would be in opposition of the broad usage of "a storage unit." Maxell's proposed **[**30]** correction of "is stored" is not subject to reasonable debate based on the claim language and specification and the prosecution history does not suggest a different interpretation of the claims.

[*690] Accordingly, the Court finds that the claim is not indefinite and construes "a storage unit in which group information generated by classifying the plurality of base stations into groups" to mean "a storage unit in which group information generated by classifying the plurality of base stations into groups is stored."

B. The '292 Patent

The '292 Patent relates generally to techniques for determining the position of a device, more specifically to a method for determining a position of a mobile handset using both GPS and cellular signals. The Abstract of the '292 Patent recites:

> To extend the areas where a mobile handset can determine its position using radio waves, the present invention provides a mobile handset that is

> equipped with both position calculation means using radio waves from GPS satellites and position calculation means using RF carriers from cellular base stations. Positioning results obtained from both of these position calculation means are combined and weighted with GPS positioning reliability and cellular positioning **[**31]** reliability, respectively. A weighted mean of these results is then output as a final position calculation result.

'292 Patent Abstract. More particularly, the '292 Patent describes a mobile handset that receives transmissions from GPS satellites, determines a position of the mobile handset using GPS signals and calculates the reliability of the GPS position. '292 Patent 3:24-4:3, Figure 1. The mobile handset also receives transmissions from cellular base stations, determines the position of the mobile handset using the cellular signals, and calculates the reliability of the cellular position. '292 Patent 4:4-34, Figure 1. The mobile handset then combines the GPS position, the cellular position, the GPS reliability calculation and the cellular reliability calculation to determine an accurate position of the mobile handset in diverse ambient conditions and environments. '292 Patent 4:43-56, Figure 1.

3. "combining" / "combined" ('292 Patent claims 1 and 2)

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Maxell contends that its proposed construction "accounts for the embodiments where the 'GPS-based position calculation result 202' or the 'cellular based position calculation **[**32]** result 302' will have 'no effect on further processing' because they assigned a reliability value of 0." Docket No. 95 at 24-25 (citing '292 Patent 3:64-4:3, 4:36-42). Maxell contends that its proposed construction for combining "is consistent with the embodiments disclosed in the specification—*i.e.*, 'a determination based on one or more inputs' because, in the scenario where the reliability value of one of the positions is 0, the combining means will make a determination based on one input." *Id.* at 25 (citing '292 Patent 3:64-4:3, 4:36-42; Docket No. 95-1 at ¶ 5). Maxell contends that Huawei's proposed construction excludes this disclosed embodiment. *Id.*

According to Huawei, the '292 Patent explains that the GPS and cellular positioning results are "weighted with the reliability 205 and the reliability 305, respectively" and then input to "combination unit 410" which "calculates a weighted mean." Docket No. 100 at 17 (citing '292 Patent 4:49-56, Abstract, 2:13-18, 3:12-17, 4:43-49, 5:7-12, Figures 2 (606) and 3). Thus, Huawei contends, the data are merged.

[*691] Huawei argues that merging "is not merely a preferred embodiment; it is the only embodiment." *Id.* Huawei contends that the inventors "believes that the 'accuracy of the position determination **[**33]** may be enhanced' by 'using **both** GPS and cellular signals' 'compared to . . . using either . . . alone.'" *Id.* (citing '292 Patent 4:1-3) (emphasis original). According to Huawei, when one estimate is unreliable, its reliability value is preferably set to zero and the estimate has no net effect in the merge. *Id.* at 17-18. Huawei further asserts that, even though the estimate has no net effect on the merge, it still "enters the combiner to be merged. Combining unit 400 does not make any decisions based on the inputs; it simply merges them." *Id.* at 18.

Huawei contends that its construction is also consistent with the extrinsic evidence and constructions of "combine" from other patents. *Id.* at 18 n. 11, 12.

Huawei particularly objects to Maxell's proposed construction as expanding "combining" into "selecting." *Id.* According to Huawei, Maxell's construction would allow for an output based on merely one input—so "if the GPS and cellular positions are equally reliable, a device can just use one and throw the other away." *Id.* at 18-19. But, Huawei contends, "that is *selecting*, not combining." *Id.* at 19 (emphasis original). Moreover, Huawei argues, the present invention uses both GPS and cellular signals, an enhancement compared to using only one of the two, and allowing **[**34]** a device to select between the two would "eviscerate[e] the patent's fundamental feature." *Id.* (citing *On Demand Machine Corp. v. Ingram Indus., Inc., 442 F.3d 1331, 1344 (Fed. Cir. 2006)*). As an example, Huawei proposes that Maxell's construction would allow for ignoring cellular results completely in a situation where GPS results had 75% reliability and cellular results had 50% reliability, which would be direct opposition to the claimed "combining." *See* H'rg Tr. at 25:1-27:21, 29:6-30:14.

The specification is clear that both cellular and GPS data are calculated. Further, a reliability factor is output from each of the cellular and GPS calculation units even when it is determined that a position calculation is impossible for the particular unit. '292 Patent 3:64-4:3, 4:36-42. The specification describes and shows the position being output to the combiner in all cases. *Id.* at Figures 1-3, 3:33-59, 3:64-4:3, 4:10-35, 4:36-42,

Maxell's construction would encompass a system that merely selected one or the other of GPS and cellular—for example switching between the two. Construing "combining" / "combined" to mean a determination based on one or more inputs would allow for selection and, thus, ignore the language of the claim and the clear corresponding scope of the specification. **[**35]** *Id.* at 4:49-56, Abstract, 2:13-18, 3:12-17, 4:43-49, 5:7-12, Figures 2-3.

Maxell contends that Huawei's construction excludes the "value of 0" embodiment in which one of the GPS position or cellular position will have "no effect on further processing." In that embodiment, however, the data from both the GPS and cellular units is still provided to the combiner. The specification and the claims do not state that in such a situation the data is not combined; instead, the specification explains that the reliability weighting is adjusted to achieve the "no effect." That one value may have a corresponding reliability set at zero to have no effect does not mean that the data from the two units is not provided to the combining unit for combining. As described, both values are still output to the combiner.

Thus, as noted in the specification, the "mobile handset of the present invention preferably combines the positioning results obtained by both of [the GPS and cellular] **[*692]** positioning means [with] the reliability of the positioning. . . [so that] the mobile handset can accurately determine its position in diverse ambient conditions and environments." '292 Patent 2:13-18. The specification describes a mathematical **[**36]** function (shown in Figure 3) for combining the four inputs supplied to the combining unit 400/410. Although combining all four inputs is preferable, the specification notes that the GPS position results (or the cellular position results) supplied to the combining unit may not be accurate. '292 Patent 3:64-4:3, 4:36-42. When this occurs, the reliability value corresponding to the inaccurate GPS or cellular position is set to 0, so that when the GPS/cellular position and reliability values are combined in the mathematical function, the inaccurate GPS or cellular position has no effect on the position calculation result. '292 Patent 4:43-56.

Maxell's construction would enable the combining unit to determine a position calculation result based on only one, two, three or four of the inputs being supplied to the combining unit. For example, Maxell's construction could enable the combining unit to determine the position of the mobile device based on GPS position alone without ever receiving the other values. This is in direct contrast to the scope of the invention and the claims themselves. '292 Patent 2:13-18.

At the oral hearing, it became clear that Maxell intended to include providing only one factor to the combining unit **[**37]** in the ordinary meaning of "combining." The Court does not agree that such a meaning falls within the ordinary meaning of "combining" or within the meaning of "combining" as used in the specification. In light of Maxell's unsupported view of "combining" and to clearly address that dispute between the parties, the Court makes clear the usage of all of the factors (though a factor could be set to "0" to provide "no effect" for certain factors) as described in the specification by construing the term to require "merging." *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362 (Fed. Cir. 2008)* (requiring claim construction disputes to be resolved).

Accordingly, the Court construes "combining" / "combined" to mean "merging" / "merged."

4. "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" ('292 Patent claim 1)

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[*693] The parties agree that this term is a means-plus-function term and generally agree on the function but disagree as to the structure of the means term.

Maxell argues that, while the structure includes block 400 in Figure 3 includes part of the structure that corresponds to the GPS/cellular positioning results combining means, it is "not the only disclosed structure or processing step." Docket No. 95 at 23 (emphasis original). Maxell contends that the '292 Patent provides other examples of processing steps **[**39]** that are to be performed by the claimed combining means in addition to performing the weighted mean disclosed in Figure 3. *Id.* Specifically, Maxell points to the example when the reliability value is 0:

> In some cases, the GPS reliability calculation unit 204 may determine that positioning by GPS is impossible. (For example, if the number of GPS satellites used is found to be two or less). In that event, the GPS reliability calculation unit 204 preferably outputs a value of 0 as the reliability 205 so that the GPS based position calculation result

202 has no effect on further processing.

Id. at 23-24 (citing '292 Patent 3:64-4:3). Maxell also cites to its expert to contend that, in the case where reliability of the cellular or GPS based position is zero, the combining means will not necessarily need to perform a weighted mean because the other non-zero position will be selected. *Id.* at 24 (citing Docket 95-1 (Braasch Decl.) ¶¶ 50-51). Maxell contends that Huawei dismisses the embodiments where the "GPS/cellular positioning results combining means" will ignore the "GPS-based position calculation result 202" or the cellular based position calculation result 302 because they were unreliable. *Id.* (citing '292 Patent at 3:64-4:3, 4:36-42). **[**40]**

Maxell also contends that the '292 Patent can be performed by "a single mobile handset," thus a processor that can perform the claimed function is necessarily included. *Id.* at 24 (citing Braasch Decl. at ¶¶ 50-51 (contending that it is known in the art that a mobile handset may include a processor)). At the oral hearing, Maxell conceded that the term "processor" was not found in the specification. H'rg Tr. at 36:16-21.

Huawei contends that the only structure clearly linked to the function of the combining means is the weighted average disclosed in Figure 3, described at 4:49-56, and identified as block **606** in Figure 2. Docket No. 100 at 23 (citing Akl Decl. at ¶ 156). Huawei contends that the additional disclosure that Maxell points to is not structure and is not clearly linked to the combining function. *Id.* (stating that lines 36-41 of 4:36-56 is not structure for the combiner; 4:42-56 is subsumed by Figure 3; 3:64-4:3 (same); 3:12-17 (inputs and outputs, not structure); 5:3-7 (same)); and citing Akl Decl. at ¶¶ 157-68).

Because the specification describes the use of a mobile handset, Maxell would have the structure of every means term merely being a processor of a mobile handset. A "structure disclosed **[**41]** in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic Inc., 248 F.3d at 1311*. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function but, rather, whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The specification does not clearly link a generic processor of a mobile handset to the claimed function. In fact, the specification does not recite the processor of a mobile handset. The specification does, however, clearly describe the GPS / Cellular Positioning Results Combining Unit 400 as performing the claimed **[*694]** function. '292 Patent 4:43-56, Figures 1 and 3.

Maxell contends that Huawei ignores the example wherein the reliability 205 value or the reliability 305 value are 0. As discussed above for the "combining" term, the specification does not describe the weighted mean approach as not being used in such situations. Rather, it is noted that the reliability outputs are set to zero so that the GPS or cellular position has no result, as can be seen from the disclosure. **[**42]** The weighted mean approach is still described as being used, though one of the weightings may be 0. *See* '292 Patent 3:64-4:3, 4:36-42, 4:49-56, block 606 in Figure 2, block 410 in Figure 3.

It is noted that "FIG. 3 represents an *exemplary embodiment* of the GPS/cellular positioning results combining unit 400." '292 Patent 4:49-50 (emphasis added). However, the corresponding structure of a means-plus-function term is limited to the structure disclosed in the specification. *See Medtronic, Inc., 248 F.3d at 1311*. The structure adopted below is the corresponding disclosed structure.

The Court construes "GPS/cellular positioning results combining means for combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability" to mean:

Function: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability

Structure: GPS / Cellular Positioning Results Combining Unit 400 of a mobile handset performing the weighted mean algorithm disclosed in Figure 3 block 400, Figure 2 block 606, and at cols. 3:12-17, 3:64-4:3, 4:36-56, or equivalents thereof.

8. "cellular position calculation [43] means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" ('292 Patent claim 1)**

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The parties agree that **[**44]** this term is a means-plus-function term and agree on the function corresponding

to the term. The parties dispute, however, whether the specification recites sufficient structure and/or algorithms for calculating the mobile handset's position from the received cellular signals to render the means term definite.

[*695] As with the other terms, Maxell objects to construing the position calculation unit for cellular 301 as the only structure. Docket No. 95 at 21. Maxell points to the '292 Patent specification:

> In much the same way, a cellular receiver 300 executes the receive operations required for position determination which preferably include: receiving the cellular signals of high/medium frequencies out of the signals received by the antenna 100; baseband signal modulation; synchronization acquisition; and reception timing calculation.

Id. (citing '292 Patent 4:4-16; *see also* '292 Patent 2:66-3:6 (describing receiver operations); '292 Patent 1:23-23 (disclosing calculating a position using cellular signals based on "propagation delay time of RF carriers.")). Maxell further argues that the disclosure of the '292 Patent makes clear that the claimed cellular position calculation means makes a "position determination" based on execution of receive **[**45]** operations, including "baseband signal modulation; synchronization acquisition; and reception timing calculation" as part of the reception. *Id.* at 21-22. Maxell points to the statement in the specification that "the handset calculates its current location using the propagation delay time of the RF carriers." *Id.* at 22 (citing '292 Patent 1:26-28). According to Maxell, one of ordinary skill in the art would understand that a processor would be a basic component of the disclosed "mobile handset" that will be required to "execute[] the receive operations" of baseband signal modulation, synchronization acquisition, and reception timing calculation and, as disclosed by the '292 Patent, these operations are "required for position determination." *Id.* (citing Braasch Decl. at ¶¶ 46-48, '292 Patent 3:24-32). As with other terms, Maxell argues that the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor for executing the disclosed operations. *Id.*

Huawei contends that "[a]ll that the patent shows is inputs ('GPS signals'), an output ('positioning result Lcell'), a black box ('Position calculation unit for cellular 301'), and a non-structural, purely functional block **[**46]** ('Calculate positioning result Lcell'). Docket No. 100 at 22 (citing'292 Patent Figures 1-2, 3:4-11, 4:10-15; Akl Decl. at ¶¶ 131-35). Huawei contends that the patent does not describe either hardware or an algorithm that connects the inputs to the output. *Id.* According to Huawei, the '292 Patent "offers 'no instruction for using a particular piece of hardware, employing a specific source code, or following a particular algorithm' for the function." *Id.* (quoting *ePlus, 700 F.3d at 519-20*). Huawei contends that Maxell identifies only a desired output, a black box, and unrelated- or non-structure. *Id.* (citing Docket No. 95 at 21).

Huawei contends that, although Maxell references an algorithm in the specification, Maxell does not *identify* an algorithm. According to Huawei, even though cellular positioning techniques were known before the filing date of the '292 Patent, "'position calculation unit for cellular 301' is not a term of art, and the mere invocation of this phrase, even in light of the other disclosure that Maxell cites, does not connote structure to a skilled person: these techniques were (and still are) usually implemented as particular algorithms in hardware or a general-purpose processor." *Id.* (citing Akl Decl. at ¶¶ 132-37). **[**47]** Huawei contends that merely because one *could* devise a way to calculate cellular-based positions does not save this claim because the inventors were required to identify the structure they wanted to claim and did not do so. *Id.*

In its reply, Maxell contends that Huawei contradicts its positions in Huawei's **[*696]** briefing on a motion to dismiss under *section 101*. Maxell contends that in its 101 briefing, Huawei stated that the '292 Patent utilizes "off-the-shelf generic GPS and cellular hardware" that "can be implemented in generic hardware" and that "the '292 Patent employs conventional GPS and cellular components for their routine functions . . . [such that] obtaining position estimates and the reliability of these estimates was background technology." Docket No. 106 at 3-4 (citing Docket No. 26 at 1, 12 and Docket No. 31 at 3).

Maxell also responds that the '292 Patent discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal." *Id.* at 5 (citing '292 Patent 4:4-16, 2:66-3:6, 1:24-29, Braasch Decl. at ¶¶ 46-48).

As with the "GPS position calculation means" term discussed above, Maxell contends that one skilled in the art would understand that the mobile handset would include a processor (such as a CPU) **[**48]** that performs cellular position calculation processes as

described in Figure 2 (block 604). Maxell also contends that the specification discloses specific algorithms for "calculating the mobile handset's position from the received cellular signal" in '292 Patent 4:4-16, 2:66-3:6, 1:24-29. As explained above, the '292 Patent specification fails to recite a processor, much less clearly link or associate a processor with the claimed function of "calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result."

The '292 Patent specification discloses "position calculation unit for cellular 301 calculates the position of the mobile handset using the cellular signals." '292 Patent 4:11-13. Huawei contends that the '292 Patent specification fails to recite *specific algorithms* for "calculating the mobile handset's position from the received cellular signal" in 4:4-16 and 2:66-3:6. However, the specification does disclose in the passage at 1:24-29 that cellular position can be calculated, i.e., by "using the propagation delay time of the RF carriers." The specification describes this technique in a manner such that it is clear that this basic cellular-position technique for determining **[**49]** location has deficiencies. These deficiencies, however, are addressed by using both GPS and RF carrier cellular information, as disclosed in the '292 Patent. '292 Patent 1:48-2:19. At the oral hearing, Maxell agreed to the construction adopted below. H'rg Tr. at 44:14-17, 46:18-23.

Accordingly, the Court construes "cellular position calculation means for calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result" to mean:

Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular based position result

Structure: position calculation unit for cellular 301 of a mobile handset, the position calculation unit for cellular 301 performing block 604 in Figure 2 and utilizing propagation delay of RF carriers for position determination, as disclosed at 1:23-27, 4:4-16, 2:66-3:6, or equivalents thereof.

9. "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" ('292 Patent claim 1) [*697]

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The parties agree that this term is a means-plus-function term and agree on the function corresponding to the term. The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating GPS positioning reliability based on the GPS-based position result to render the means term definite.

As with other terms, Maxell objects to identifying one block from the figures. Maxell contends that the specification of the '292 Patent discloses exemplary techniques **[**51]** for determining the reliability of the GPS-based position result:

> The GPS reliability calculation unit 204 calculates the reliability in a manner in which, for example, the number of GPS satellites used when the position calculation unit for GPS 201 calculated the handset position is used as the reliability 205. Alternatively, the quality of the signals received from the GPS satellites used when the position calculation unit for GPS 201 calculated the handset position might be used. . . .
>
> By way of illustration, if the received signal quality (for example, the signal-to-noise ratio (SNR) in decibels) is used, the lowest SNR among the SNRs of the signals received from the GPS satellites may be used as the reliability 205. . . .

Docket No. 95 at 18 (citing '292 Patent 3:44-4:3). Maxell contends that "[t]hese sections of the '292 Patent explain that the GPS reliability calculation unit 204 can perform several alternative processing steps to calculate the reliability of the GPS position," including "making a determination on whether the result is reliable based on the number of GPS satellites that have provided the signal." *Id.*

As an example, Maxell contends that if the GPS-based position was calculated based on **[**52]** signals received from four GPS satellites, the reliability of the result will be high because signals from multiple sources provided the same result. *Id.* at 19. As an alternative example, Maxell provides that the reliability of the GPS position can be calculated using the quality of the signals that have been received from the GPS satellites and/or the signal-to-noise ratio of the various signals. *Id.* Maxell contends that if the position was calculated based on a signal that was very noisy, the reliability of the result would be low. *Id.* Maxell again repeats that because the '292 Patent also makes clear that the disclosed invention can be performed by "a single mobile handset," which will necessarily include a processor, one of ordinary skill in the art will recognize

that these processing steps will be executed by a processor. *Id.* Maxell **[*698]** contends that Huawei's proposal ignores these processing steps provided in the '292 Patent for performing the recited function. *Id.*

Huawei contends that the '292 patent does not disclose sufficient structures for the two reliability means terms. Huawei contends that the fundamental feature of this patent is to merge GPS- and cellular-position estimates depending on the reliability for each **[**53]** position estimate. Docket No. 100 at 19 (citing'292 Patent 3:12-17). Huawei contends that, "[t]o do this, the 'mobile handset calculates the reliability (W_{gps})' for the GPS position using 'the number of GPS satellites . . . and the received signal quality' of the GPS signals. *Id.* (citing '292 Patent 2:60-65, 3:44-4:3). According to Huawei, the disclosure is nearly identical for calculating "the reliability (W_{cell})" for the cellular-based estimate, essentially replacing "satellite" with "base station." *Id.* (citing'292 Patent 4:22-34). Huawei further contends that the patent also includes black boxes marked "GPS Reliability Calculation Unit 205" and "Cellular Reliability Calculation Unit 304" in Figure 1 and purely functional steps in Figure 2 (e.g., "Calculate the reliability (W_{gps}) for L_{gps}" 602). *Id.* at 19-20. Huawei contends that, for the reliability functions, the patent insufficiently just lists (1) desired outputs—W_{gps} and W_{cell}; (2) potential inputs—the number of satellites (GPS), base stations (cellular), and received signal qualities; and (3) figures with purely functional, or black boxes. *Id.* at 20 (citing *Noah Sys., Inc. v. Intuit Inc., 675 F.3d 1302, 1317 (Fed. Cir. 2012)*; *ePlus, 700 F.3d at 519-20*; Akl Dec. ¶¶ 102-10).

According to Huawei, the '292 Patent "does not provide structure that converts these inputs into the **[**54]** desired outputs," by failing to offer, for example, "an algorithm for converting the 'number of satellites,' the 'number of base stations,' or the 'received signal quality' into reliability values for position estimates." *Id.* Huawei contends that drawing boxes for "GPS reliability calculation unit" and "Cellular reliability calculation unit," listing potential inputs to these boxes, and labeling the outputs of these boxes, does not denote structure and that the number of satellites and base stations are neither reliability values in themselves nor structure. *Id.*

As to Maxell's claim that a person of ordinary skill can calculate "high" or "low" reliability values based on the disclosed inputs (e.g., number of GPS satellites), Huawei contends that there is no support in the specification, and "high"/"low" does not fit the preferred embodiment. *Id.* at 21. (citing Akl Decl. at ¶¶ 112-13). According to Huawei, the "inventors were required to, but did not, disclose structures (e.g., algorithms) to convert data—like the number of satellites, number of base stations, or signal quality—into reliability values." *Id.* (citing *ePlus, 700 F.3d at 518*).

In its reply, Maxell contends that the '292 Patent explicitly discloses specific **[**55]** algorithms to be followed by a processor to determine the reliability of the GPS-based position based on the number of GPS satellites that provide a signal and/or based on the Signal-to-Noise Ratio ("SNR") of the received signals. Docket No. 106 at 4 (citing '292, 3:44-4:3, Braasch Decl. at ¶ 42). Maxell also contends that the '292 Patent explicitly discloses specific algorithms for determining the reliability of the cellular-based positions or for converting "number of satellites," "number of base stations," or "received signal quality" into reliability values. *Id.* (citing'292 Patent 3:6-11, Braasch Decl. at ¶ 49). Maxell contends that these specific algorithms include using the number of GPS satellites or cellular base stations ***as*** the GPS/cellular reliability value, and using the signal-to-noise ratio in decibels for signals received from the GPS satellites or cellular base stations **[*699]** ***as*** the GPS/cellular reliability value. *Id.* (citing '292 Patent 3:49-53, 3:60-63, 4:27-34).

As to the use of a processor, the rationale provided above for other terms is equally applicable here for not including "processor" within the recited structure.

Huawei contends that merely a black box is disclosed because an algorithm for converting **[**56]** the "number of satellites" or the "received signal quality" into reliability values for position estimates is not provided. Huawei further contends that the number of satellites and base stations are not "reliability values." Huawei is correct that, in general, a detailed and specific exact algorithm for calculating the reliability of the GPS/cellular positions is not disclosed in the '292 Patent. However, an algorithm and technique for operation of the disclosed structure is described that provides context to the structure. The '292 Patent states that:

> The mobile handset also calculates the reliability (W_{gps}) for L_{gps} 602 using the number of GPS satellites used in calculating L_{gps} and the received signal quality (such as a signal-to-noise ratio in decibels) for the signals from each GPS satellite.

'292 Patent 2:60-65, and

> GPS reliability calculation unit 204 calculates the reliability of the GPS-based position calculation result 205 based on the information about the reliability input from the position calculation unit for

GPS 201. . . .

'292 Patent 3:44-47. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of GPS satellites. . . and the received signal quality of the signals from the **[**57]** GPS satellites." '292 Patent 3:38-42. In illustrative examples, the '292 Patent also suggests that the "number of satellites," or the "received signal quality" "is used as the reliability 205" or "might be used." '292 Patent 3:50-59. Therefore, as disclosed, GPS reliability calculation unit 204 utilizes an algorithm in which reliability of the GPS positions involves using the information regarding the number of GPS satellites or the received signal quality to calculate the GPS positioning reliability.

Thus, the Court construes "GPS reliability calculation means for calculating GPS positioning reliability based on the GPS-based position result" to mean:

Function: calculating GPS positioning reliability based on the GPS-based position result

Structure: GPS reliability calculation unit 204 of a mobile handset, the GPS reliability calculation unit 204 performing block 602 in Figure 2 and utilizing the number of satellites or the received signal quality to calculate GPS positioning reliability, as disclosed at 2:60-65, 3:38-4:3, or equivalents thereof.

10. "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" ('292 Patent claim 1) [*700]

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The parties dispute whether the specification recites sufficient structure and/or algorithms for calculating cellular positioning reliability based on the cellular-based position result to render the means **[**59]** term definite.

The parties present the same arguments for this term as presented for the "GPS reliability calculation means" term. Maxell further states that the '292 Patent explains that cellular positioning reliability is calculated in the same way, i.e., "using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station." Docket No. 95 at 22-23 (quoting '292 Patent 3:6-11).

The same analysis applied to the "GPS reliability calculation means" applies to the "cellular reliability calculation means." It is noted that with regard to the cellular calculations, the specification similarly states:

> The mobile handset also calculates the reliability (W_{cell}) for Lcell 605 using the number of cellular base stations used in calculating Lcell and the received signal quality for the signals from each cellular base station.

'292 Patent 3:6-10, and

> The cellular reliability calculation unit 304 calculates the reliability of the cellular-based position calculation result 305 based on the information about the reliability input from the position calculation unit for cellular 301, and the unit 304 outputs the reliability 305 to the GPS/cellular positioning **[**60]** results combining unit 400.

'292 Patent 4:22-27. Further, the '292 Patent describes the "information about the reliability" as, "for example, the number of cellular base stations . . . and the received signal quality of the signals from the cellular base stations." '292 Patent 4:18-20. In illustrative examples, the '292 Patent also suggests that the "number of base stations," or the "received signal quality" "may be used as reliability 305." '292 Patent 4:31-35. Therefore, as disclosed, cellular reliability calculation unit 304 uses an algorithm in which reliability of the cellular positions involves using the information regarding the number of cellular base stations or the received signal quality to calculate the cellular positioning reliability.

The Court construes "cellular reliability calculation means for calculating cellular positioning reliability based on the cellular-based position result" to mean:

Function: calculating cellular positioning reliability based on the cellular-based position result

[*701] Structure: cellular reliability calculation unit 304 of a mobile handset, the cellular reliability calculation unit 304 performing block 605 in Figure 2 and utilizing the number of base stations or the received signal quality to calculate **[**61]** cellular positioning reliability, as disclosed at 3:6-10, 4:15-42, or equivalents thereof.

C. The '440 Patent and '760 Patent

The '440 Patent and '760 Patent share a substantially similar specification, both patents being continuations of a common parent, U.S. Patent No. 6,424,795. The '440 Patent relates to a method for reproducing recorded moving and still pictures and the '760 Patent relates to a machine-readable recording medium having moving and

still pictures recorded thereon. The Abstract of the '440 Patent recites:

> A video reproducing method and apparatus includes reproducing at least still pictures encoded by a first encoding method and first pictures that have pixels smaller than the still pictures from a recording medium. The recording medium has the still pictures, the first pictures, moving pictures encoded by a second encoding method, and second pictures corresponding to the moving pictures that have pixels smaller than the moving pictures recorded thereon. A plurality of the reproduced first pictures are outputted and the still pictures corresponding to selected first pictures are outputted.

'440 Patent Abstract. The Abstract of the '760 Patent recites:

> A recording medium which records thereon moving pictures encoded by a first encoding method, first pictures corresponding to the moving pictures **[**62]** and which have pixels smaller than the moving pictures, still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and which have pixels smaller than the still pictures.

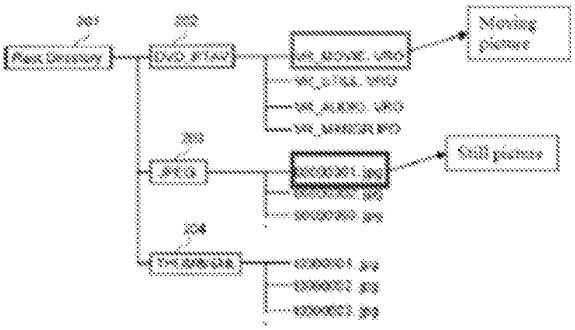
'760 Patent Abstract. More particularly, the '440 Patent and the '760 Patent describe a recording medium and video reproducing apparatus/method, which reproduces from the recording medium moving pictures and still pictures encoded by a first encoding method (e.g., an MPEG encoding standard) and still pictures encoded by a second encoding method (e.g., a JPEG encoding standard). To facilitate easier searching of both types of pictures, thumbnail pictures (i.e., compressed data having a smaller number of pixels) corresponding to the moving pictures and the still pictures encoded by the first and second encoding methods are recorded, and a plurality of the thumbnail pictures are output or displayed. In the '440 Patent, a moving picture corresponding to a selected one of the thumbnail images is output or displayed. *See* '440 Patent 10:41-11:14, 11:31-12:50, Figures 4 and 5.

11. "still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than [63] the still pictures are recorded" ('440 Patent claims 1, 3, 5, and 7)**

Go to table?

[*702] Maxell contends that the fact that this term does not require any construction is apparent from Huawei's proposed construction, which parrots the claim language with the exception that Huawei adds the underlined phrase: "still pictures encoded by the first encoding method and by a second encoding method. . . ." Docket No. 95 at 9. Maxell contends that the claim language makes clear that: "moving pictures [are] encoded by a first encoding method" and "still pictures encoded by a second encoding method." *Id.* Maxell contends that Huawei imports a limitation by imposing the claimed first encoding method for moving pictures on the claimed second encoding method for still pictures. *Id.* at 10.

According to Maxell, Huawei's proposed construction improperly excludes a preferred embodiment disclosed in the '440 Patent. *Id.* at 10-11. Maxell points to Figure 2 and Figure 4 as **[**64]** showing that a moving picture is recorded with a ".VRO" extension (e.g., first encoding method) and still pictures are recorded with a ".jpg" extension (e.g., second encoding method). *Id.* at 11.



Id. (citing '440 Patent Figure 4 (emphasis added), 10:49-51 ("Numeral 203 is a directory for recording JPEG data files for storing compressed still pictures")). Maxell contends that Huawei's construction would exclude this embodiment because it would require the still picture to be encoded in both the first (".VRO") and second (".jpg") encoding methods. *Id.* While Maxell acknowledges that what Huawei's construction requires is described in the specification in other embodiments, it contends that it is not a requirement, or even a part of, other embodiments. *Id.* Maxell argues that the specification discloses embodiments in which the reproducing apparatus includes the capability to reproduce one but not both still picture encoding formats. *Id.* (citing '440 Patent 12:61-63 ("if no fine still picture signal is output . . . the fine still picture expanding circuit can also be omitted")). Maxell further states that the specification does not limit still pictures to a specific format, pointing to the passage: "Although both fine **[**65]** still pictures

and thumb nail pictures are recorded in a JPEG data file respectively in this embodiment, both fine still and thumb nail pictures may be recorded in any file format and in any different file formats." H'rg Tr. at 72:2-8 (citing '440 Patent 11:15-18). Maxell contends that there is no requirement for the reproducing apparatus to be able to handle pictures that have been recorded under the moving picture format. Docket No. 95 at 11.

[*703] In response, Huawei states that the parties agree that the "first encoding method" is a moving picture encoding method (e.g., MPEG) and that the "second encoding method" is a still picture encoding method (e.g., JPEG). Docket No. 100 at 11. Huawei contends that the dispute is whether the claims require a still picture to also be encoded by the first encoding method (i.e., a moving picture encoding method). *Id.* at 11-12.

According to Huawei, "[t]hey do because 'the very character of the invention' requires a still picture to be encoded using a moving picture encoding method (as a single-frame moving picture) so that a device that only reproduces moving pictures can now reproduce a still picture." *Id.* at 12 (citing *Allec, Inc. v. Int'l Trade Comm'n, 342 F.3d 1361, 1370 (Fed. Cir. 2003)*). Huawei contends that the '440 Patent describes the "present invention" **[**66]** as encoding a still picture using both the first and the second encoding methods. *Id.* at 13 (citing '440 Patent 2:50-59, 2:59-3:20, 4:52-60). Huawei also argues that encoding a still picture using a moving picture encoding method is implicated in every embodiment. *Id.* (citing '440 Patent 7:3-8 (first embodiment), 9:36-42 (second embodiment), 12:38-41 (third embodiment), 13:58-62 (fourth embodiment)).

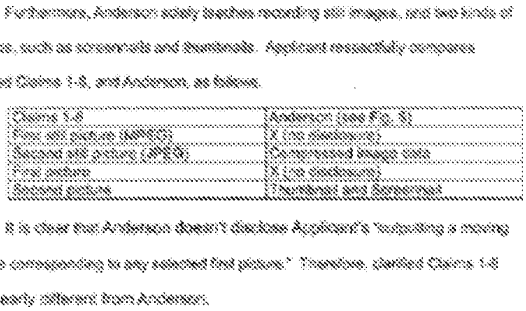
Huawei also points to the prosecution of U.S. Patent No. 7,295,767, which shares the specification with the '440 Patent, in which the inventors overcame an obviousness rejection by arguing that "[o]ne characteristic point of the present invention" is that still pictures are "still pictures encoded by **the first** encoding method **by which moving pictures are encoded**." *Id.* (citing Docket No. 100-19 at 12 (emphasis original)). Huawei also identifies another statement in the prosecution history as relevant:

> According to the present invention, you can get an excellent merit like following. For example, applicant's invention is advantageous in a moving-pictureonly player which implements the first encoding method by which moving pictures are encoded (for example, MPEG), but which does not implement the second encoding method by which still pictures are encoded (for **[**67]** example, JPEG). In fact, there are many DVD players like this. Traditionally, you cannot play still pictures on this player. But, according to applicant's disclosed and claimed Invention, there is recorded the still pictures encoded by the first encoding method by which moving pictures are encoded, so you can play still pictures on such a moving-picture-only player as above.

Id. According to Huawei, the applicants "reinforced this by arguing that their "invention [of] having moving/first-encoding-method (e.g., MPEG), and still/first-encoding-method (e.g., MPEG) recording was [the] key in being able to reproduce still pictures within a device having **MPEG-only** capabilities." *Id.* at 13 (citing Docket No. 100-19 at 13) (emphasis original). Huawei contends that above-cited prosecution history of a patent having the same specification as the '440 Patent underscores that encoding a still picture using the first encoding method (i.e., the moving picture method) is the key feature of the invention. *Id.* at 13-14. Huawei further notes that the patent emphasizes the benefit of being able to omit reproduction circuitry for still pictures encoded with JPEG. *Id.* at 14 (citing '440 Patent 12:61-63).

At the oral hearing, Huawei further pointed to the **[**68]** file history of the '440 Patent where the applicant distinguished the Anderson reference. Specifically, Huawei contends that the applicants distinguished claims 1-8 as:

[*704]



Furthermore, Anderson solely teaches recording still images, and two kinds of pictures, such as screennails and thumbnails. Applicant respectfully completes clarified Claims 1-8, and Anderson, as follows.

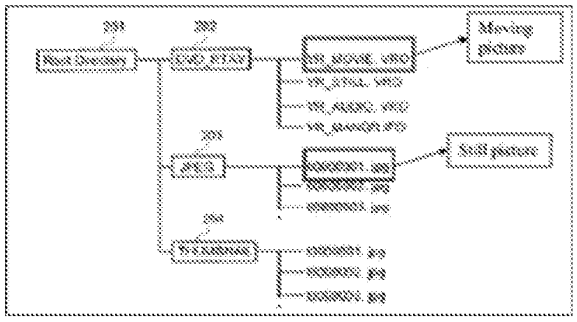
Claims 1-8	Anderson (see FIG. 3)
First still picture (MPEG)	X (no distinction)
Second still picture (JPEG)	Compressed image data
First picture	X (no distinction)
Second picture	Thumbnail and Screennail

It is clear that Anderson doesn't disclose Applicant's "outputting a moving picture corresponding to any selected first picture." Therefore, clarified Claims 1-8 are clearly different from Anderson.

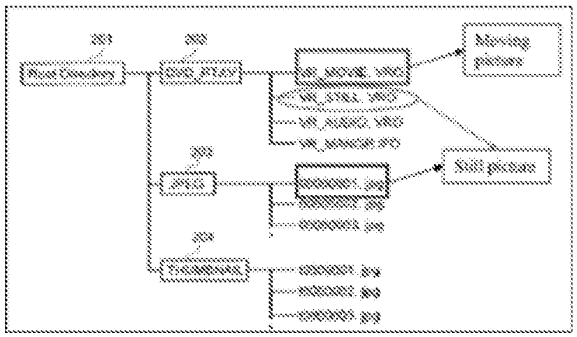
Docket No. 119-3 at 9. Huawei contends that the reference to "First still picture (MPEG)" limits the claimed first still picture to a picture encoded by a moving picturing format, the first encoding method. *See* H'rg Tr. at 73:2-74:16.

Huawei also objects to Maxell's characterization of Figures 2 and 4, arguing that Maxell incorrectly asserts that Huawei's construction excludes Figure 4. Docket

No. 100 at 14. Specifically, Huawei compares Maxell's annotation of Figure 4 with Huawei's own annotation of Figure 4.



[*705] Maxell's annotation of Figure 4 (Docket No. 95 at 11).



Huawei's annotation of Figure 4 (Docket No. 100 at 14).

Huawei contends that "Figure 4 discloses recording a still picture as both (1) a JPEG still picture (.jpg file: blue box) and (2) an MPEG still picture (a .VRO file: green oval): 'In the still picture photographing mode, MPEG I-picture still pictures are recorded in the VR_STILL.VRO file . . . as well as a fine still picture data file containing JPEG-compressed data is recorded with a file name of 00000001.jpg under **[**69]** the JPEG directory 203 . . ..'" *Id.* (quoting '440 Patent 11:2-8). Huawei states that Maxell ignores that the purpose of the invention is to record a still picture as a single-frame moving picture so that a device that only has a moving picture encoding method can reproduce both a moving and a still picture. *Id.* at 14-15. Huawei contends that by ignoring this feature of the invention, Maxell seeks to reduce the '440 Patent claims to the prior art apparatus disclosed in the "Background Art" section, merely embellished with a thumbnail. *Id.* at 15.

In its reply, Maxell contends that Huawei's proposal improperly limits the claims to the proposed solution of a problem in the prior art and that "statements about the difficulties and failures in the prior art, without more, do not act to disclaim claim scope." Docket No. 106 at 2 (citing *Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc., 620 F.3d 1305, 1315 (Fed. Cir. 2010)*). According to Maxell, other problems with the prior art were also disclosed, and the specification did not limit the disclosed techniques to just addressing one problem. H'rg Tr. at 70:12-71:3 (citing '440 Patent 2:5-11, 2:12-17).

As to the file history of U.S. Patent No. 7,295,767, Maxell notes that this related patent explicitly claims "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket **[**70]** No. 106 at 2 (citing Docket No. 106-1 at 15:12-13). Maxell further notes that four other patents that share the same specification as the '440 Patent also include claims that explicitly require encoding still pictures with the "first encoding method" and encoding additional still pictures with "the second encoding method." *Id.* (citing claim 20 of U.S. Patent No. 7,457,529 (Docket No. 106-2); claim 1 of U.S. Patent No 7,995,897 (Docket No. 106-3); claim 1 of U.S. Patent No 6,424,795 (Docket No. 106-4); and claim 1 of U.S. Patent No 8,417,088 (Docket No. 106-5)). Maxell contends that this shows that when the applicant intended to claim multiple types of encoded still pictures, it included such recitations **[*706]** in the claim, but it did not do so in the '440 Patent. *Id.*

On its face, the claim language is clear: The language of the claim clearly reflects that still pictures are encoded by the second encoding method. Huawei seeks not to interpret any word or phrase in the claim, but, rather, seeks to add a whole limitation missing from the claim language. As noted by Maxell, the specification does disclose an embodiment that includes still pictures encoded by the second encoding method (pointing to Figures 2 and 4). Though Huawei may be correct that this embodiment also teaches still pictures produced by the first **[**71]** encoding method (moving picture encoding method), Huawei has not identified intrinsic evidence mandating this additional limitation to be added to the clear claim language. Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal or disclaimer mandating that the still pictures must also be ones produced by the first encoding method. *See GE Lighting Solutions, 750 F.3d at 1309*; *Cordis Corp., 561 F.3d at 1329*.

Huawei does point to the embodiments of the specification. However, even if a limitation is in all embodiments, that is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc., 632 F.3d 1246,*

1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). As noted by Maxell, the specification does support an interpretation that still pictures are encoded by a second encoding method (the JPEG encoding format). '440 Patent Figure 4. That the figure also shows pictures encoded by a first encoding method (the moving picture encoding format) does not mandate, however, that the claimed still pictures must be encoded by two different encoding **[**72]** formats. As noted by Maxell, for example, the specification does describe embodiments in which one may omit "converting the format of the fine still picture signals to the same signal format as that of the single frame moving picture signals" and "no fine still picture signal is output." *Id.* at 12:51-64. Thus, the specification indicates that using two different encoding formats for generating still pictures is not a requirement.

The Court is not persuaded that prosecution history of the related U.S. 7,295,767 mandates a different result. The prosecution history speaks to a claim in which the claim language at issue included "still pictures encoded by the first encoding method by which moving pictures are encoded." Docket No. 100-19 at 2. Further, the fact that the claim language of that patent explicitly includes such language further emphasizes that the term "still pictures" itself does not mandate still pictures are encoded by the moving picture encoding method. *See* Phillips, 415 F.3d at 1314 ("To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Finally, the '440 Patent file history is—at most—ambiguous **[**73]** and does not make an affirmative statement regarding the "still pictures encoded by a first encoding method." The '440 Patent claims do recite "moving pictures encoded by a first encoding method and *first pictures* having a smaller number of pixels than the moving pictures" (emphasis added). Separately, the '440 Patent claims recite that what is recorded is "the moving pictures, the first pictures, as well as still pictures encoded by a second encoding method, and second pictures corresponding to the still pictures **[*707]** and having a smaller number of pixels than the still pictures."

The chart cited by Huawei from the '440 Patent file history does not represent to the '440 Patent claims in multiple respects. For example, the claims do not recite "first still picture" and "second still picture," as identified in the chart but instead call out first pictures, second pictures and still pictures which have the corresponding second pictures. In relation to the claim language, the chart does not indicate that the "still pictures encoded by a second encoding method" and which have "second pictures corresponding to the still pictures" are still pictures encoded by both MPEG and JPEG standards. Further, the chart purports to relate to claims **[**74]** 1-8, yet it is only claims 2, 4, 6, and 8 which incorporate MPEG for the first encoding method and JPEG for the second encoding method. Finally, it is noted that the use of the chart was explicitly presented during prosecution to argue that Anderson "doesn't disclose applicant's 'outputting a moving picture corresponding to any selected first picture.'" Docket No. 119-3 at 10. It is clear that the applicant distinguished Anderson based on the last limitation of the claim, which calls out "outputting a moving picture corresponding to any selected first picture," not based on an alleged statement that the claimed "still pictures" were encoded by both the first and second encoding methods. Ultimately, the prosecution history does not reflect a disavowal of clear claim language as Huawei argues. *See* Phillips, 415 F.3d at 1318 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes"); *see also* Athletic Alternatives, Inc., 73 F.3d at 1580 (ambiguous prosecution history may be "unhelpful as an interpretive resource").

The Court construes the term "still pictures **[**75]** encoded by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded" to have its plain and ordinary meaning.

12. "first encoding method" ('760 Patent claims 1, 3, 4, 6, 7, 9, 10, 12, 13, and 15)

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The parties dispute whether the "first encoding method" is limited to moving picture encoding methods.

The term first appears in the claims in the phrase "a first still picture recorded thereon by a first encoding methods." Maxell contends that it is clear that the first encoding method is one of potentially several encoding methods that may be used for encoding still pictures,

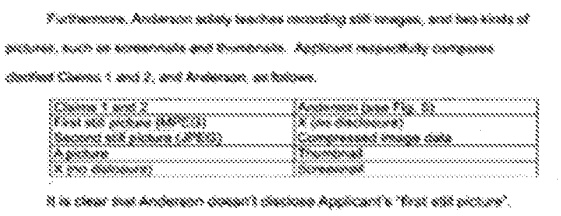
including JPEG, MPEG, or others, without any preferential order. Docket No. 95 at 32 (citing '760 Patent 8:5-7, 8:9-11). Maxell further states that the patent discloses that still pictures "may be recorded in any file format and in any different file formats." *Id.* (citing '760 Patent 11:14-15). Maxell contends that there is no ambiguity in the claim that would limit the first encoding method to be a moving picture encoding method. *Id.*

Huawei **[**76]** contends that, consistent with the specification, a still picture should be encoded in a moving picture encoding method ***and*** a still picture encoding method. Docket No. 100 at 15. According to **[*708]** Huawei, Maxell incorrectly argues that a still picture could be encoded in two types of still picture encoding methods, without a moving picture encoding method. *Id.* Huawei repeats the arguments presented above with regard to the "still pictures encoded by. . ." term to assert that encoding a still picture using both a still picture encoding method ***and*** a moving picture encoding method is "one of the primary inventive contributions of the patent." *Id.* (emphasis original). Huawei contends that the '760 Patent consistently refers to the "first encoding method" as a moving picture encoding method that is used to encode a moving picture ***and*** a still picture (as a single-frame moving picture):

> [T]he present invention used for a video recording apparatus that can record both moving and still pictures on a recording medium includes steps for recording moving pictures encoded with the use of the first encoding method when in recording moving pictures; and for recording still pictures encoded with the use of the second **[**77]** encoding method and other still pictures encoded by the first encoding method from single frame signals . . .

Id. at 16 (citing '760 Patent 2:50-57; 2:58-3:19 (referring to the "first encoding method" as a moving picture encoding method that is used to encode a still picture as a single-frame moving picture), 4:5-12 (same), 4:51-59 (same), 4:60-67 (same), 5:4-13 (same), 5:14-20 (same), 5:24-30 (same)).

According to Huawei, the prosecution history of the '760 Patent family confirms its understanding. *Id.* Huawei contends that to overcome a rejection, the applicant distinguished the Anderson reference by providing the following table, and arguing that Anderson did not disclose the claimed "first still picture" in MPEG:



Id. (citing Docket No. 100-23 at 12). Huawei contends that if the applicant had not limited the "first still picture" to a moving picture encoding method (e.g. MPEG), Anderson would have clearly disclosed this limitation because it discloses two still pictures: (1) a compressed image data in one encoding method, and (2) a screennail in another encoding method. *Id.* at 16, n.8. Huawei contends that Anderson's screennail would thus have been a "first still picture" and the applicant had already admitted that Anderson's **[**78]** compressed image data met the claimed "second still picture." *Id.*

Huawei contends that Maxell now seeks to broaden the "first encoding method" to include still picture encoding methods, and Maxell's construction would expand the scope of the claims far beyond anything described in the specification. *Id.* at 17 (citing *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (construing "wound" to mean "skin wound")).

In its reply, Maxell argues that the prosecution history Huawei cites supports **[*709]** Huawei's position, as the applicant "clarified Claims 1 and 2 don't have a 'moving image' capability." Docket No. 106 at 12 (citing Docket No. 100-23 at 12). Maxell also notes that the chart from the file history references claims 1 and 2, and that dependent claim 2 is the claim that explicitly recites "MPEG standard." *Id.* According to Maxell, Huawei's proposed constructions would "render dependent claims 2, 5, 8, 11, and 14 superfluous because the dependent claims already recite MPEG." *Id.* at 12 n.16.

As drafted, the claims merely characterize the two encoding methods as a first encoding method and a second encoding method. Huawei's proposal would limit the two different methods to one being a moving picture method and one being a still picture method, but the claim language **[**79]** as explicitly drafted is not so limited. Similarly to as noted above with the prior term, Huawei has not identified language of lexicography, disavowal, or disclaimer. *See GE Lighting Solutions, 750 F.3d at 1309*; *Cordis Corp., 561 F.3d at 1329*.

As to the file history, as Maxell points out, the file history emphasizes the more generalized meaning of "first" and

"second." The applicant explicitly stated that "Anderson doesn't disclose Applicant's first still picture" in reference to a chart which shows Anderson as having "no disclosure" of a first still picture. Docket No. 100-23 at 12. At most, it is this aspect which the applicant emphasized as a distinction from Anderson with relation to claim 1, not MPEG. Moreover, in the section of the file history immediately before to the chart comparing the claims to Anderson, the applicant stated that claims 1 and 2 "don't have a 'moving image' capability." *Id.* at 11. Further, similar to the prior "still pictures" term, the table in question also references claim 2, which explicitly references MPEG. *Phillips, 415 F.3d at 1317*. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips, 415 F.3d at 1317*. Such is the case here, with statements that do not overcome the claim's clear reference to **[**80]** merely "first" and "second" encoding methods.

Accordingly, the Court construes the term "first encoding method" to have its plain and ordinary meaning.

D. The '517 Patent

The '517 Patent relates generally to wireless communications, more specifically to a mobile device capable of automatically selecting a physical interface for communication based on (1) communication availability of the physical interface, (2) device moving speed and (3) position of the mobile device. '517 Patent 1:58-2:6. The Abstract of the '517 Patent recites:

> A mobile communication terminal device which includes a plurality of different communication interfaces that are automatically switched for making a communication. The stable connection is ensured whether the terminal device remains at rest or is moving by monitoring positional information on the terminal device for a moving situation thereof to control a selection from a plurality of physical interfaces. This selection control involves selecting a connection to a narrow range communication such as wireless LAN which is inexpensive and stable when the terminal device remains at rest, and selecting a connection for a communication through a portable telephone which provides a connection over a wider range **[**81]** when the terminal device is moving. Also, a connection for a communication is automatically selected from the positional information, thereby permitting an automatic selection of a connection intended by the user.

[*710] '517 Patent Abstract. More particularly, the '517 Patent describes a mobile device (100) having a plurality of physical interfaces (e.g., 120, 130 and/or 140) for communicating with external networks. '517 Patent Figures 1, 2, and 5. The mobile device monitors communications between the physical interfaces and the external networks to determine communication availability, detects the position (e.g., a GPS position) of the mobile device, and determines if the mobile device is at rest or moving. The mobile device then determines a physical interface to use for communication based on (1) communication availability of the physical interface, (2) device moving speed, and (3) position of the mobile device. *See*, '517 Patent 3:5-61, 7:1-8, Figures 1, 2 and 5.

13. "selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface"

"wherein said selection switching determination unit makes a selection switching based on the communication availability [82] determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit"**

"wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the movement speed being faster" ('517 Patent claim 1)

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[*711] The parties agree that this term is a means-plus-function term but dispute whether a sufficient algorithm is disclosed for the means-plus-function term.

Huawei contends that the '517 Patent fails to disclose structure corresponding to the claimed function of the "selection switching determination unit," because the patent describes a "switching determination unit 108" but does not identify physical structure for this unit. Docket No. 100 at 27. Huawei contends that it is merely a black box described by the function it performs, which is insufficient. *Id.* (citing '517 Patent 3:33-39, 3:50-61, 4:41-50 and Docket No. 100-2 (Wells Decl.) ¶ 43, *Noah Systems, 675 F.3d at 1317* and *ePlus*, *700 F.3d at 519-20*).

According to Huawei, the specification fails to disclose an algorithm to perform the claimed functions, instead only providing flow charts that partially describe how the switching determination unit 108 selects a physical interface, but do not address the key function: waiting a longer time until switching. *Id.* (citing '517 Patent Figure 4, 6, & 9). Huawei states that Figures 4 and 9 do not consider moving speed at all in determining how long to wait before switching even though claim **[**85]** 1 requires "wait[ing] a longer time until switching" interfaces when the device is moving "faster." *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, instead, the figures focus on whether the device is in a rest-state or a moving-state to determine which interface to use. *Id.* (citing Wells Decl. at ¶ 45). Huawei contends that, based on the claim language, the patent must disclose structure that (1) considers moving speed when making the switching decision and (2) varies the wait time based on the moving speed, but that Figures 4 and 9 insufficiently only consider whether the device is moving or not, and even then not for the purpose of adjusting a wait time. *Id.* (citing Wells Decl. at ¶ 45).

According to Huawei, Figure 6 does consider whether the moving speed is "high" or "low" (step S407-1) but does not vary the wait time before switching. *Id.* at 27-28 (citing Wells Decl. at ¶ 46. Huawei contends that Figure 6 and its disclosure do not depict or explain how to vary the wait time wait based on moving speed. *Id.* at 28 (citing Wells Decl. at ¶ 46).

Huawei argues that the patent's sole passage about waiting a period of time before switching relates to switching away from the current physical interface **[**86]** when it becomes unavailable. *Id.* (citing '517 Patent 6:62-7:9). Huawei contends that the related flow charts only explain how a device selects a network address when first selecting a physical interface and that the disclosure about waiting a period of time before switching only turns on whether the device is moving or not without (1) considering the moving speed or (2) or requiring waiting a longer time depending on the moving speed. *Id.* (citing '517 Patent 6:62-7:9, Figure 6 (S401)).

In its reply, Maxell contends that there is sufficient structure disclosed in the '517 Patent for this term. Docket No. 106 at 7. Maxell argues that the '517 Patent explicitly discloses that the claimed invention can be implemented in a "notebook type personal computer, a portable telephone, a PDA, [and/or] a car navigation device." *Id.* (citing '517 Patent 3:5-10). Maxell also contends that the '517 Patent indicates that a "terminal data control processing unit 103, which may be based on a CPU, a microcomputer IC or the like, is responsible for the processing associated." *Id.* (citing '517 Patent **[*712]** 3:23-31). According to Maxell, "by repeatedly referring to the processing unit 103, the '517 Patent makes clear that all of the operations, including switching interfaces, in this terminal are being **[**87]** implemented under the control of unit 103, *i.e.*, CPU or microcomputer." *Id.* (citing '517 Patent 3:3-60, 5:25-46, 8:1-9, 8:53-67, Docket No. 106-6 (Caloyannides Decl. B) ¶¶ 27-28). Maxell contends that a person of ordinary skill in the art would understand that one or more processors will be used to implement the structure of the claimed "selection switching determination unit." *Id.* (citing Caloyannides Decl. B ¶¶ 25-28).

As to algorithms, Maxell contends that when considered as a whole, the '517 Patent provides sufficient descriptions of one or more algorithms. *Id.* (citing '517 Patent Figures 4, 6, 9, & 10; Caloyannides Decl. B at ¶ 29). Maxell contends that Huawei's sole argument is predicated on the fact that the '517 Patent does not disclose "the key function: waiting a longer time until switching." *Id.* (citing Docket No. 100 at 27). Maxell contends this concept is disclosed:

> On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical interface switching wait time may be set to be long. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Id. (citing '517 Patent 6:62-7:8). **[**88]** Maxell contends that this section of the '517 Patent explicitly discloses that when a particular physical interface becomes unavailable, the terminal device 100 should wait for a period of time to see if the physical interface becomes available. *Id.* (citing Caloyannides Decl. B at ¶ 31). Maxell contends that this passage also explains that this time period of waiting depends on the movement of the device, such that if the device is moving, the physical interface should wait longer. *Id.* at 8.

Maxell also argues that the '517 Patent explains with respect to Figure 4 that, if the mobile device is moving at a slow speed (e.g., at rest) and using the portable telephone interface it will switch to LAN, but if the device is moving at a higher speed than at rest and if it is on the portable telephone interface, it will wait a longer time to switch, i.e., stay on the portable telephone interface instead of switching to LAN. *Id.* (citing '517 Patent 6:32-68). Maxell contends this is because of different "Rest-State" and "Moving-State" priorities identified in Figure

4(b). *Id.* Maxell contends similar examples are also provided with respect to Figures 8, 9, and 10. *Id.* at 8 n. 9 (citing '517 Patent 8:58-9:18, 9:54-10:9).

Maxell contends that the specification **[**89]** provides for a structure that includes a central processing unit programmed to execute the algorithms disclosed in the specification. Even accepting Maxell's structure, the Court finds that algorithms for all the claimed function are not disclosed. Thus, sufficient structure to satisfy the requirements of 35 U.S.C. §112 ¶ 6 is not disclosed. *See* WMS Gaming Inc., 184 F.3d at 1349; Aristocrat Techs., 521 F.3d at 1333.

Specifically, the claim language includes: "said selection switching determination unit waits a longer time until switching of said physical interface *when said movement determination unit determines the movement speed being faster.*" '517 Patent claim 1 (emphasis added). As noted by Huawei, such language does not just require identification of movement or rest, but rather some level of the relative speed: "the movement being faster." As noted by Huawei, the disclosures related to the "switching determination unit" generally provide for only a determination based on rest versus movement. *See* '517 Patent Figure 4 (block S407), Figure 6 (block **[*713]** S407), Figure 9 (block S910), 5:3-14; 6:28-35, 6:45-52, 6:53-62, 9:5-18, 9:54-10:9. At the oral hearing, Maxell acknowledged that the language "determines the movement speed being faster" does not relate to rest versus movement, but rather **[**90]** high speed versus low speed movement. H'rg Tr. at 96:2-14.

Speed is discussed with regard to the switching priorities. Specifically, Figure 6 section (b) and the passage at 7:45-67 discloses three states: "rest state priorities," "high speed moving state priorities" and "low speed moving state priorities." However, these relate to what interface is chosen based on the determination of the moving speed being faster or slower, not changing the waiting time until switching based on the high speed versus low speed. At the oral hearing, Maxell emphasized the passages at 5:3-14 and 9:5-18. *Id.* at 92:12-94:21. However, the first passage relates again to the different priorities given, specifically a higher priority given to a portable telephone during movement. '517 Patent 4:64-5:14. The second passage also relates to determining which physical interface to select. *Id.* at 9:2-18. Neither passage references changing the wait time "when said movement determination unit determines the movement speed being faster."

As discussed in more detail below, with regard to the "wait" term, the "waits a longer time" concept is disclosed at '517 Patent 6:62-7:8. This disclosure does not describe different wait times based on determining **[**91]** the moving speed being faster or slower. Rather, the wait time just changes based on resting versus movement.[4] Again however, as the parties agree, the claimed function is not a rest versus movement determination. Rather, the claimed function relates to changing the wait time based on the determination of the movement speed being faster (low speed versus high speed). Maxell has not identified, and the specification provides no disclosure of, any algorithms for performing this claimed function. The lack of an algorithm corresponding to the claimed function renders the term indefinite. *See* WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d at 1349.

Accordingly, the Court construes the "selection switching determination unit for . . ." term to mean:

Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of **[**92]** said physical interface when said movement determination unit determines the moving speed being faster

Structure: insufficient corresponding structure is disclosed for the claimed function.

14. "waits a longer time until switching" ('517 Patent claim 1) [*714]

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The parties dispute whether the time period of the wait must be a period that is "set" and whether it must be set "before" the determination.

Maxell objects to Huawei's construction as importing into the claim from the specification the scenario where the period of time is "set." Docket No. 95 at 26. Maxell

[4] The Court notes that, even as to rest versus movement, the general concept is merely disclosed without further algorithm support.

notes that '517 Patent discloses that, when device 100 remains at rest, the switching wait time "may be set to short" and that when device 100 is moving, the switching wait time "may be set to be long." *Id.* (citing '517 Patent 6:66-7:8). According to Maxell, Huawei's proposal improperly imports "set" into the claim language when the patent makes clear that a wait time "may be set," which implies that a time period is not always necessarily set. *Id.* at 26-27. Maxell also relies on the "may be set" language to counter Huawei's **[**93]** argument that the time is always set in advance. Docket No. 106 at 6. As to the reference to "fixed time" in the passage, Maxell contends that there is no indication in the '517 Patent that "fixed time" means a time period that is always set in advance of switching and that a fixed time can simply mean a fixed period of time. *Id.* at 6 n. 8.

Huawei counters that the patent only offers a single passage about intentionally waiting to switch interfaces, which states that, when the current physical interface is unavailable, the device "waits for a fixed time" before deciding whether to switch interfaces to "prevent useless switching":

> If a physical interface in use becomes unavailable during a communication, the mobile communication terminal device 100 waits for a fixed time for the physical interface to recover. If the physical interface does not recover even after the fixed time, the connection is switched. Since the mobile communication terminal device 100 is relatively stable in communication when it remains at rest, a physical interface switching wait time **may be set to be short**. On the other hand, when the mobile communication device 100 is relatively instable in communication when it is moving, the physical **[**94]** interface switching wait time **may be set to be long**. In this way, it is possible to prevent useless switching from one physical interface to another and to switch to an appropriate physical interface.

Docket No. 100 at 24 (citing '517 Patent 6:62-7:8). Huawei contends that this "fundamental feature of the alleged invention" is reflected in its proposed construction. *Id.* According to Huawei, the claim is not about incidental delays in switching due to the inherent time it takes to analyze wireless signals received by a moving device, as those delays occur whether or not the switching mechanism accounts for moving speed. *Id.* at 24-25. Instead, Huawei contends, this incidental instability is the alleged problem in the prior art that the patent wants to solve. *Id.* at 25. Huawei contends that the invention attempts to solve the problem by expressly using the device's moving speed as a factor in the interface selection, by waiting longer intentionally before attempting to switch interfaces when the device is moving faster. *Id.* (citing '517 Patent 1:58-64).

In response to Maxell's contention that construction is unnecessary, Huawei counters that Maxell's infringement contentions reveal a fundamental dispute over claim scope. *Id.* Huawei **[**95]** contends that Maxell alleges infringement of claim 1 by devices that ignore moving speed in their switching decisions, but that may coincidentally **[*715]** take longer to establish a connection because of inherent instability in the connection or temporary reductions in signal strength that occur when moving. *Id.* (citing Docket No. 100-24 at 59). Huawei contends that if devices ever (incidentally) take longer to switch, it is due to inherent aspects of wireless communication in a moving device, which the '517 Patent sought to ameliorate by expressly using moving speed in the switching decision. *Id.* Huawei contends that unlike a passive word like "takes" (i.e., "takes a longer time"), "wait" implies an intentional delay. *Id.* Huawei further states that the specification likewise speaks of "setting" the delay. *Id.* (citing'517 Patent 6:66-7:5).

As to use of "may" in the cited specification passages, Huawei contends that this ignores the text immediately before Maxell's cite noting that the device "waits for a fixed time for the physical interface to recover" and only switches "[i]f the physical interface does not recover even after the fixed time." *Id.* at 26 (citing '517 Patent 6:62-7:8). Huawei contends that "may" only means that the fixed **[**96]** time can be set to different intervals; it does not mean that waiting a longer time is optional. Huawei contends that some "fixed time" is defined (i.e., "set") as the wait time before deciding whether to switch. *Id.*

Huawei has not pointed to any language of lexicography, disclaimer or disavowal in the specification that requires the waiting time to be predetermined in advance. Further, even the passage at 6:62-7:8 merely states that wait times may be set, without requiring setting the time prior to the determination. Accordingly, the claim does not require that the period of time is "set" "before" the determination.

Huawei's primary argument is that Maxell's construction is intended to cover incidental waiting that may occur

when moving, such incidental waiting that may be irrespective of the determination of the movement determination unit. The surrounding claim language, however, is instructive. The "waits a long time" is not just any wait but rather as claimed: "said selection switching determination unit waits a longer time until switching of said physical interface ***when said movement determination unit determines*** the moving speed being faster." '517 Patent claim 1 (emphasis added). The interaction **[**97]** of the different portions of this phrase requires the longer wait to be based on the determination. Thus, the claim itself requires the longer time to be based on the determination of the movement determination unit. This corresponds also to the specification passage cited by the parties in which the waiting time is dependent upon movement or non-movement. Some incidental change unrelated to the determination is not claimed nor described in the specification.

At the oral hearing, the Court proposed a construction with a note that stated that the phrase "when said movement determination unit determines" requires the longer wait to be based on the determination. Maxell agreed to such an interpretation. H'rg Tr. at 83:23-84:6. Such an interpretation conforms to the plain and ordinary meaning of the term in context of the surrounding claim limitations.

The Court construes the term "waits a longer time until switching" to have its plain and ordinary meaning.

E. The '443 Patent

The '443 Patent relates generally to power management, more specifically to techniques for conserving battery power by providing for a power saving state. The Abstract of the '443 Patent recites:

> An information processing apparatus can save an electric **[**98]** power when it is not in use and can be made active immediately after an operation medium such as a pen and a finger or the user approaches **[*716]** or comes in contact with the apparatus, the arrangement being such that a housing portion of the apparatus includes therein a sensor for detecting the approach or contact of a user operation medium or user and a state display unit for informing the user that the apparatus is in the active state or in the standby state, a power saving control unit controls a controlled object concerning a power consumption in response to the approach, contact or separation of the operation medium or user, and a timer included in the electric power saving control unit determines whether or not the operation medium or user is separate from the apparatus.

'443 Patent Abstract. More particularly, the '443 Patent describes an information processing apparatus having detecting means (e.g., a sensor) for detecting the approach or contact of an operation medium (e.g., a pen, or a user's finger, voice, etc.), and control means (e.g., a power saving control unit) for controlling power consumption of the information processing apparatus in response to the detected approach or contact, or the lack **[**99]** thereof for a predetermined time period. In the '443 Patent, the information processing apparatus is set in a non-power saving state if the user approaches or comes in contact with the information processing apparatus. On the other hand, the information processing apparatus is set in a power saving state, if the user has been away from the apparatus (or has not touched the apparatus) for a predetermined time or more. *See*, '443 Patent 2:1-24, 3:58-4:35, Figure 1.

17. "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" ('443 Patent claim 1)

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The parties dispute the corresponding structure for the means term, specifically whether approach detection techniques are required.

Maxell contends that the '443 Patent associates a sensor with the function of "detecting" and lists several examples of structures for the sensor, including "an image sensor, a microphone or a temperature sensor etc." Docket No. 95 at 7 (citing '443 Patent 4:2-6; 4:19-23 (describing the role of the sensor in the overall power-saving scheme)). Maxell also contends that the patent discloses that a touch-sensitive surface can be provided on a tablet to detect the approach of a pen or finger. *Id.* (citing '443 Patent 11:42-46). Maxell further **[*717]** points to Table 1 of the '443 Patent as disclosing multiple kinds of tablets that can operate as sensors for detecting approach and/or contact, including a "capacitance system tablet" ('443 Patent 11:26-27), "pressure sensitive **[**101]** resistance system tablet" ('443 Patent at 11:27-28), "transmission pen type ultrasonic system tablet" ('443 Patent at 11:28-29), and several others. Docket No. 95 at 7-8.

Maxell contends that the patent also describes the capabilities of these sensors: (1) "the capacitive coupling system tablet can also detect the approach of the pen/finger input medium" ('443 Patent at 11:34-36) and (2) "the optical system tablet can detect both the contact and approach of the pen/finger input medium depending on the distance in the height direction from a touch-sensitive surface of an array of sensing and emitting devices . . ." ('443 Patent at 11:36-40).Docket No. 95 at 8.

Maxell contends that Defendants' construction includes some of these examples while excluding others, specifically the "capacitance system tablet," "pressure-sensitive resistance system tablet," "transmission pen type ultrasonic system tablet," and "surface acoustic wave type ultrasonic system tablet." Maxell contends that these other examples are expressly recited in dependent claims 13-19. Maxell also contends that each of these structures also appears in Table 1 of the '443 Patent. Docket No. 95 at 8.

Defendants contend that the patent specification describes "approach detection type" **[**102]** (e.g., proximity) and "contact detection type" detection systems. Docket No. 100 at 4 (citing'443 Patent 9:13-15). Defendants also contend that Table 1 of the patent lists a variety of detector options and expressly describes each as approach type, contact type or both. *Id.* According to Defendants, as originally presented, claim 1 was written so as to capture both approach type and contact type systems. *Id.* (citing Docket No. 100-27 at 49 (Original claim 1, lines 3-7) ("detecting means for detecting whether an operation medium operated by the user . . . approaches or comes in contact with . . . the apparatus")). Defendants contend that the PTO rejected the claim as indefinite under *Section 112(2)* as reciting "non-equivalent alternatives." *Id.* (citing Docket No. 100-28 (May 6, 1994 Office Action) at 2). Defendants contend that the PTO found that approach type and contact type systems were non-equivalent.

Defendants argue that the patentee narrowed claim 1 to delete reference to contact detection and required that the detecting means detect whether the user associated medium "at least approaches" the housing. *Id.* (citing Docket No. 100-29 at 2 (August 8, 1994 Amendment)). Defendants contend that any corresponding structure must at least **[**103]** be approach type, although it may also be contact type and that this is consistent with the plain meaning of "at least approaches," which requires, at a minimum, approach type. *Id.* Defendants contend that the plain meaning of the original claim language "approaches or comes in contact with" could be satisfied by either approach type or contact type and that the corresponding structures included in Maxell's construction but not included in Defendants', are described in the patent as contact type only, and thus do not fall within the scope of the claim. *Id.*

Maxell counters that the claim was not amended to exclude "contact type" detecting systems as suggested by Defendants. According to Maxell, Defendants mischaracterized the patentee's August 8, 1994 amendment and the amendment overcame the Examiner's *§ 112* rejection based on the "such as" language previously found in the claims. Docket No. 106 at 1 (citing Docket No. 100-28 (May 6, 1994 Office **[*718]** Action) at 2 ("Throughout the claims the 'such as' phrases makes the claims indefinite."). Thus, Maxell contends, the patentee amended the claims to address this issue, not to narrow the scope of the claims to "approach type."

The claim amendment in question is instructive: **[**104]**

> 3. (Amended) An information processing apparatus comprising:
>
> a housing;
>
> [a] a detecting means for detecting whether [an operation medium operated by the user, such as a pen or finger or a medium accompanying with the user] a user-associated medium at least approaches [or comes in contact with a whole of or] at least a part of a housing of [the] said apparatus; and

Docket No. 100-29 at 2. Maxell contends that the "intent" of the amendment was only to remove the "such as" language objected to in the prior Office Action. The prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips, 415 F.3d at 1318*. What is clear, however, is that the amendment, in addition to removing the "such as" language, also changed the claim language to remove "or comes in contact with a whole of or." It is also clear that, as issued, the claim language requires the detecting means to detect whether "a user-associated medium at least approaches said apparatus." As claimed, approach detection is required of the detecting means. The "at least" language allows for a detecting device that detects both approach and contact, but approach detection must be included.

The corresponding structure must, therefore, be structure that meets this explicitly claimed function of including approach detection. That the dependent claims include the addition of other detection techniques does not change that claim 1 requires "at least approach detection." Maxell's proposed inclusion of various

detection schemes listed as "and/or" would allow the **[**105]** claimed structure to include only the contact based systems, which would be inconsistent with the claim language as explained above.

Maxell's argument that the dependent claims mandate Maxell's construction is flawed. First, as noted above, as drafted the claim uses "at least" and thus does not mandate only use of approach detection. Thus, using both approach detection and contact detection, for example, would be encompassed with the claim scope. To the extent the dependent claims add additional detection mechanisms, such claims are not in conflict with the independent claim which recites "at least approaches." Further, even if in conflict, the doctrine of claim differentiation, at most creates a rebuttable presumption and "cannot broaden claims beyond their correct scope." *See* *Seachange Int'l, Inc. v. C-COR, Inc., 413 F.3d 1361, 1368-69 (Fed. Cir. 2005)*. Here, the claim language resulting from the amendment is clear.

The Court construes "a detecting means for detecting whether a user associated medium at least approaches at least part of a housing of said apparatus" to mean:

Function: detecting whether a user associated medium at least approaches at least a part of a housing of said apparatus

Structure: Electromagnetic induction systems, electrostatic coupling **[**106]** system, and **[*719]** Optical system, listed in Table 1; "microphone" (18:8); "temperature sensor" (19:12); "cameras" (Figures 14 and 15), or equivalents thereof.

F. The '317 Patent

The '317 Patent relates generally to navigation systems, more specifically to portable terminals suitable for walking navigation. The Abstract of the '317 Patent recites:

> A portable terminal has a function of walking navigation. The direction of a destination is displayed by an indicating arrow that always points in the direction of the destination. In the navigation processing, the user enters data to select a menu and/or set retrieving conditions on the setup screen. At first, the user gets the location information of the portable terminal, represented by a latitude/longitude or coordinates and an altitude, for example. Then, the user gets the direction information of the portable terminal, which is the direction of the tip of the portable terminal as determined by a compass, a gyro, or a clinometer. The location information and the direction information are set as terminal information for the retrieving conditions. The system controls retrieving of the database and retrieves the information corresponding to the selected menu, such as route guidance. **[**107]**

'317 Patent Abstract. More particularly, the '317 Patent describes a portable terminal, which does not require a user to input their current location and which presents navigational information on a narrow screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 2:51-61. The portable terminal includes devices for obtaining a location and direction of the user's present place, so that the user does not have to input such information. '317 Patent 2:62-3:8. In addition, the portable terminal may compress the location and direction information, so as to display a direction of movement from the user's present place with simply an arrow. This enables the navigation information to be displayed on a small-sized screen of the portable terminal in a manner that is easily understood by the user/walker. '317 Patent 3:18-26.

20. "walking navigation" ('317 Patent claims 1, 10, 15, 16, 17, and 20)[5]

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The parties dispute whether the term excludes systems that are usable in a car.

Maxell argues **[**108]** that absent an explicit disavowal, negative limitations are generally disfavored. Docket No. 95 at 41 (citing *Omega Eng'g, Inc. v. Raytek Corp., 334 F.3d 1314, 1332-33 (Fed. Cir. 2003)*). According to Maxell, ZTE's only intrinsic evidence is a single passage in the background section of the patent that discusses that some prior art car navigation system "cannot be used as a walker's navigation system as is" because it "is too large for a walker to carry" and "because the navigation system premises that the system is used while the object car is running on a road." *Id.* (citing'317 Patent 1:34-37). Maxell contends that the same passage explains **[*720]** that the bulkiness issue can be resolved by using "a PDA with GPS and a handy GPS" as a location information system for walkers. *Id.* (citing'317 Patent 1:37-39). Maxell also argues that

[5] The parties did not submit oral argument for this term.

nowhere in this passage from the background section to the described embodiments, does the patent exclude using a portable location information system such as "a PDA with GPS and a handy GPS" in a car. *Id.* Maxell contends that the term "walking navigation" is readily understood and has a common meaning. *Id.* at 42.

Maxell contends that its proposal embraces the term's plain meaning and conforms to the passages in the specification related to providing information to a **[**109]** user that is walking: (1) describing "the function of walking navigation" in the context of a "Neighborhood Guidance Service" example (7:43-8:9), (2) describing "the function of walking navigation" in the context of a "Meeting by Appointment Guidance Service" example (8:10-57), and (3) describing "the function of walking navigation" in the context of a "Present Place Guidance Service" example (8:58-9:39). *Id.* Maxell contends that Figure 3 makes it plain that "walking navigation" means information that navigates a user that is walking by depicting directional arrows that aids a user in navigating to a particular location. Docket No. 95 at 42.

ZTE counters that in describing the deficiencies of the prior art and touting how the invention allegedly overcomes those deficiencies, a patent may disclaim coverage of the denigrated arrangement. Docket No. 100 at 35 (citing *Tronzo v. Biomet, Inc., 156 F.3d 1154, 1159 (Fed. Cir. 1998)*). According to ZTE, the specification makes plain that "walking navigation" is mutually exclusive from driving navigation:

> For example, a car navigation system to be mounted on a car is too large for a walker to carry around. In addition, because the navigation system premises that the system is used while the object car is **[**110]** running on a road, it cannot be used as a walker's navigation system as is.

Id. (citing '317 Patent 1:31-38). As to Maxell's argument that the inclusion of the phrase "as is" negates the disclaimer in this case and that the passage was concerned with the fact that such systems were "bulky" or too large to car, ZTE points to the conclusion language "[i]n addition . . . it cannot be used as a walker's navigation system as is" and argues that there is no teaching in the '317 Patent of modifying or adjusting a car system to also be a walking navigation system. *Id.*

In its reply, Maxell contends that the '317 Patent describes the problems with "conventional" navigation systems of the time as being too large for a walker to carry. Docket No. 106 (citing '317 Patent 1:19-21, 34-35). Maxell contends that conventional 1990s navigation systems were described as unsuitable for use in walking navigation "as is," but this statement is not an express disclaimer of a system that could be used in cars and just identifies a problem in the prior art. *Id.* (citing '317 Patent 1:36-38; Braasch Decl. at ¶¶ 39-46).

The full claim limitation states "said display changes according to a change of said direction of said portable terminal orientation for walking navigation." **[**111]** Thus, as claimed, the system has to be able to provide navigation for walking. ZTE's limitation, however, would require that the terminal "is not usable" for car navigation. Thus, a terminal that may be used for walking under ZTE's construction would have to have no use in a car. The passage cited by the parties does not disclaim potential car use and—at most—disclaims systems that are too large to be portable for carrying by a walker. '317 Patent 1:31-38. **[*721]** ZTE has cited no disclaimer for support of the negative limitation to the extent which ZTE seeks.

The Court construes "walking navigation" to mean "information to navigate a user who is walking."

21. "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" ('317 Patent claim 6)

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The parties dispute whether or not structure is disclosed for the means-plus-function term.

ZTE contends that the functions at issue are clearly software steps (outputting, receiving data) and no corresponding algorithm or corresponding structure is disclosed. Docket No. 100 at 36 (citing Docket No. 100-6 (Andrews Decl.) ¶¶ 49-51).

Maxell contends that the functions of "outputting" and "receiving" do not require algorithms because such functions can be performed by a general purpose computer. Docket No. 106 at 14 (citing *In re Katz, 639 F.3d at 1316*). Specifically, Maxell contends that functions like "processing," "receiving," and "storing" "can be achieved by any general purpose computer without specialized programming" and, in such cases, "it [is] not necessary to disclose more structure than the

general purpose processor that performs those functions." *Id.* at 14-15 (quoting *In re Katz, 639 F.3d at 1316*, citing Braasch Decl. at ¶¶ 50-51). Maxell contends that neither ZTE nor its expert conclude otherwise and concede that "the functions at issue" are "outputting, receiving data." *Id.* (citing Docket No. 100 at 36). Maxell contends that the general purpose CPU described in the '317 Patent 9:42-43 is sufficient for **[**113]** performing these functions. *Id.*

The term in question references the earlier recited claim element: "a device connected to the server." The term in question is then recited: "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server."

Maxell points to the CPU of Figure 10 as being the corresponding structure. The specification describes the CPU in the passage cited by Maxell: "[t]he portable terminal **[*722]** 61 is provided with a CPU 71, which is a control unit." '317 Patent 9:42-43. Figure 10 also includes a "device for data communication 76," "device for getting location information 77," and "device for getting direction information 78." It is noted that claim 6 includes the limitations (1) "a device for getting location information," (2) "a device for getting direction information" and (3) "a device connected to a server. . .wherein. . .said device connected to said server outputting. . .and receiving. . .." The claim limitation in question includes "outputting said location information and said direction information." As shown in the Figure 10, a CPU 71 is connected to **[**114]** the device for data communication 76, device for getting location information 77 and device for getting direction information 78. '317 Patent Figure 10. The CPU 71 is the "control unit" of the portable terminal. *Id.* at 9:40-50. Maxell's expert analyzes the meaning of this passage and figure. Braasch Decl. at ¶¶ 50-54. To the extent the evidence conflicts as to the understanding of one skilled in the art as to the control of the claimed outputting, the Court credits the testimony of Maxell's expert as more persuasive. *See* Braasch Decl. at ¶¶ 50-54; *Teva Pharms. USA, 135 S. Ct. at 841 (2015)* (authorizing courts to make subsidiary factual findings about extrinsic evidence in claim construction).

A close reading of the specification, in context of Figure 10, clarifies that the corresponding structure for the claimed function includes the "CPU 71" and "a device for data communication 76." The device for data communication 76 is then described in the specification as "a device for data communication 76 of an ordinary portable telephone and a PHS [Personal Handyphone System] terminal." Maxell's expert testimony conforms to this disclosure:

> Moreover, the '317 Patent discloses specific structure for a portable terminal to connect to a server and receive retrieved **[**115]** information from the server. For example, the patent discloses that the portable includes data communication 76 (Fig. 10, '317 Patent at 9:47-49), and cellular antenna ('317 Patent at 5:66-67). In addition, the portable terminal includes a CPU (e.g. CPU 71, Fig. 10) for performing processing steps associated with communicating, receiving, and displaying information. '317 Patent at 9:42-43. For example: [quoting a description of the flow chart of Figure 7].

Braasch Decl. at ¶ 54. In light of the specification as interpreted by one skilled in the art, the claimed function involves the use of the CPU 71 and the device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal. *See* '317 Patent 9:40-9:51.

ZTE invokes *WMS Gaming*, contending that no algorithm is disclosed. However, the Court finds that the general functions of "outputting" and "receiving" as recited in the claim are more akin to the "processing," "receiving," and "storing" terms described in *In re Katz*. *See In re Katz, 639 F.3d at 1316* (finding that it was "not necessary to disclose more structure than a general purpose processor" for functions that "can be achieved by any general purpose computer without special programming" including processing, receiving, **[**116]** and storing).

At the oral hearing, Maxell substantially agreed with the construction proposed below by the Court. H'rg Tr. at 126:13-16.

The Court construes "said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server" to mean:

Function: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server

[*723] Structure: CPU 71 and device for data communication 76 of a portable telephone and a Personal Handyphone System (PHS) terminal (Figure 10, 9:40-50), or equivalents thereof.

G. The '729 Patent

The '493 Patent and '729 Patent share a substantially similar specification.[7] The '493 Patent and the '729 Patent relate to electric cameras, and more specifically, to an electric camera having an image sensing device having a sufficient number of pixels that is capable of taking highly detailed still images and moving video with reduced image quality without increasing circuitry. '493 Patent 3:8-13. The Abstract of the '493 Patent recites:

> An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and **[**117]** an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

'493 Patent Abstract. More particularly, the '493 Patent and the '729 Patent describe an electric camera including an image sensing device (e.g., a CCD) having a number (e.g., 1200) of vertically arranged pixels and a number (e.g., 1600) of horizontally arranged pixels. '493 Patent 4:34-48. When taking still images, all of the effective pixels on the image sensing device are used to produce signals with as high a resolution as possible. '493 Patent 7:31-39. When taking moving video, a number (e.g., 1200/240 **[**118]** = 5) of the vertically arranged pixels are mixed or culled, so that the number of lines of output signals from the image sensing device match or conform to the number of effective scanning lines (e.g., 240) of a television monitor. '493 Patent 4:64-5:6, 7:40-59, 9:30-36. The '729 Patent further describes an image stabilizing operation, which reduces image unstability in the moving video by shifting the effective pixel area of the image sensing device in a direction that cancels the image unstability. '729 Patent 7:11-28.

22. "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" ('729 Patent claim 1)[8] [*724]

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The parties dispute whether or not the term is a means-plus-function term.

Maxell argues against means-plus-function treatment for this term for three reasons. Docket No. 95 at 44. First, Maxell contends that the term "image sensing device" alone denotes a definite structure or class of structures, namely, image sensors. *Id.* Maxell states that a person of ordinary skill in the art would understand that, both from the claim language itself and from the descriptions of an "image sensing device" in the specification, this term refers to a definite class of structures that convert incident light into an electric signal. *Id.* (citing '729 Patent 4:36-39, 10:14-18, and Docket No. 95-4 (Madisetti Decl.) at ¶¶ 35-37). According to Maxell, the claim itself also describes the structure for the "image sensing device" as having "an array of pixels arranged vertically and horizontally in a grid pattern," further supporting that this term has sufficiently definite structure. *Id.*

Second, Maxell argues that the '729 Patent's specification describes in detail exemplary structures for the **[**120]** "image sensing device." *Id.* at 45 (citing '729 Patent 4:36-65, Figure 2). And third, Maxell contends that ZTE's construction improperly narrows the scope of the claims, construing "an image sensing device" as a "solid state image sensing device" with numerous other limitations. *Id.*

ZTE counters that this term should be construed according to 35 U.S.C. § 112, ¶ 6 because the claim doesn't contain sufficient structure to do the function of image sensing. Docket No. 100 at 37. ZTE contends that although this limitation does not include the word "means," the limitation does not recite sufficiently definite structure for performing the claimed function, and thus should be construed as a means-plus-function limitation. *Id.* ZTE contrasts (with emphasis added) claim 1 of the '493 Patent, which ZTE argues includes the requisite structure for image sensing (a light

[7] The '729 Patent is a continuation of the '493 Patent, which is a continuation of U.S. Patent No. 8,057,177, which is a divisional of U.S. Patent No. 6,765,616.

[8] The parties did not provide oral argument for this term.

receiving sensor), with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure for image sensing:

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[*725]

at 37. **[**121]**

According to ZTE, here, a pixel is a data construct in an image (with data representing color intensities from multiple image filter-sensor elements), not an element on a sensor as Maxell asserts. *Id.* at 38. ZTE then argues that the corresponding structure for imaging sensing must include the color sensitive filters includes color filters arranged in vertical lines. *Id.* For support, ZTE cites to the passage: "On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes." *Id.* (citing '729 Patent 4:41-46). ZTE also points to the passage

> FIGS. 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals." at 15:25-30.

In its reply, Maxell argues that ZTE "merely avers that the addition of the words *with a light receiving [**122] sensor* transforms an insufficiently structure limitation into one with sufficient structure" but, according to Docket No. Maxell, "a person of skill in the art would associate 'image sensing device' with a class of structures regardless of whether the words *with a light receiving sensor* are part of the claim." Docket No. 106 at 15 (emphasis original). Maxell argues that its expert testimony remains unrebutted and that ZTE also disregards the description of the image sensing device in the patent itself. citing '729 Patent 4:36-65, 12:50-13:15, Figure 2, Figure 10. Maxell contends that the term "image sensing device" describes in the claims how the device operates to achieve the inventions' objectives. *Id.* And, according to Maxell,the '729 Patent's specification describes the "image sensing device" and its operation in detail and the use of additional words (here, *image sensing*) in conjunction with the word *device* places an additional functional constraint on a structure otherwise adequately defined. at 15-16 (citing '729 Patent 4:36-65, Figure. 2, *Free Stream Media Corp. v. Alphonso Inc., 2017 U.S. Dist. LEXIS 46921, 2017 WL 1165576, at *35 (E.D. Tex. Mar. 29, 2017)* (emphasis original).

Though a term that does not use "means" is presumed not to be a means-plus-function term, *Williamson* does note that "device" maybe a nonce word "that **[**123]** is tantamount to using the word means." *Williamson, 792 F.3d at 1350.* In this case, however, the full term in question includes "image sensing device." "Image sensing device," as opposed to just "device," imparts a structural significance to the term. In *Williamson*, the word "module" included a prefix of "distributed learning control," which the Federal Circuit determined did not impart structure:

> Although the "distributed learning control module" is described in a certain level of detail in the written description, the written description fails to impart **[*726]** any structural significance to the term. At bottom, we find nothing in the specification or prosecution history that might lead us to construe that expression as the name of a sufficiently definite structure as to take the overall claim limitation out of the ambit of *§ 112, para. 6*.

Id. at 1351. Here, the intrinsic record is the opposite. The specification is replete with references to "image sensor device" as used in the prior art discussion and in the description of the embodiments. These passages describe, at length, the working detail and structure of both prior art image sensing devices and the disclosed imaging sensing device. '729 Patent 1:25-2:2, 2:20-55, 4:36-65, 10:14-18, 12:50-13:15, **[**124]** Figure 2, Figure 10. In context of the specification as a whole, this term is different than that in *Williamson*.

That ZTE acknowledges that a claim that merely adds a "light sensor" to the term "image sensing device" is sufficient structure further supports this result. ZTE has pointed to no evidence that the disclosure of the image sensor device of the '729 Patent would not include a light sensor. In fact, the specification specifically states light "is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal." *Id.* at 4:37-39. The specification further states "FIG. 2 shows the structure of this image sensing device. . . [where reference number] 30 are ***pixels each formed of a photodiode***, which are arranged horizontally and vertically in a grid pattern." *Id.* at 4:40-43 (emphasis added). In contrast to ZTE's interpretation of a "pixel" ("a pixel is a data construct in an image"),

the specification clearly states that the pixels are photodiodes, which are structures known to be light receiving sensors.

Further, the claim includes additional structural description of the image sensing device: "an image sensing device having an array of pixels **[**125]** arranged vertically and horizontally in a grid pattern." The additional structural description of the image sensing device ("an array of pixels arranged vertically and horizontally in a grid pattern") further removes the term from means-plus-function usage by showing sufficiently definite structure. *See* *Free Stream, 2017 U.S. Dist. LEXIS 46921, 2017 WL 1165578, at *25 (E.D. Tex. Mar. 29, 2017)* (declining to construe "client device" as a means-plus-function term because "the claims themselves connote sufficiently definite structure by describing how the 'client device' operates within the claimed invention to achieve its objectives")).

Finally, the extrinsic evidence provides a detailed analysis of the specification and how the disclosure reflects a class of structures that is known to one skilled in the art. Madisetti Decl. at ¶¶ 35-44. ZTE's expert merely makes unsupported allegations that one skilled in the art would not identify structure in the specification, seemingly focusing on an argument that "structure for image sensing must include the color sensitive filters." Docket No. 100-4 (Mansoorian Decl.) at ¶¶ 35-43. However, such testimony does not negate the intrinsic and extrinsic evidence that "image sensing device is a known class of structure." The competing extrinsic **[**126]** evidence more strongly supports Maxell's position that the term is understandable as structure.

Based upon these factors, the presumption that the term is not a means-plus-function term has not been rebutted.

The Court construes the term "an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern" to have its plain and ordinary meaning.

23. "an image stability detector" ('729 Patent claim 1) [*727]

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The parties dispute whether the term is a means-plus-function term.

Maxell contends the claim should not be interpreted as means-plus-function because it does not use the word "means" and lacks a "for" clause with a stated function. Docket No. 95 at 46. Maxell also contends that the Federal Circuit and other post *Williamson* decisions have held that "'detector' is a sufficiently definite **[**127]** structural term to preclude the application of *§ 112, P 6*." *Id.* (citing *Personalized Media v. Int'l Trade Comm'n, 161 F.3d at 705*; *Raytheon Co. v. Cray, Inc., 2017 U.S. Dist. LEXIS 89342, at *69-70 (E.D. Tex. June 9, 2017)*; *NetFuel, Inc. v. F5 Networks, Inc., 2017 U.S. Dist. LEXIS 101587, 2017 WL 2834538, at *19 (N.D. Ill. June 29, 2017)* (concluding that "detector" is "more definite than 'means' or 'mechanism'")). Maxell further contends that the specification expressly describes "gyro sensors 16*a*, 16*b*, that detect vertical and horizontal image-unstabilities." *Id.* (citing '729 Patent 7:12-14). Maxell contends that "Gyro sensors" are exemplary specific, definite, and sufficient structures for detecting image instabilities.

ZTE responds that "image instability" by itself is a term that is not known in the art of image processing. Docket No. 100 at 39 (citing Mansoorian Decl. at ¶¶ 47-48). ZTE contends that images are data that is both fixed in time and in space and there is nothing in an image that could be "unstable" or "instable." *Id.* (citing Mansoorian Decl. at ¶ 49).

ZTE contends that "image instability" is discussed in the specification: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors." *Id.* (citing '729 Patent 4:32-4:35). ZTE contends that cameras detect motion of the **[**128]** imaging platform or camera, not unstability or instability of a resultant image. *Id.* (citing Mansoorian Decl. at ¶¶ 47-49). ZTE also contends that the specification fails to teach any manner to relate vertical or horizontal motion of the camera to a purported "image instability." *Id.* (citing Mansoorian Decl. at ¶ 50). ZTE further argues that it is quite unclear if the patentee equated "instability" with "unstability" or what these terms would even mean with respect to image data. Even if one were to relate the purported "image instability" to motion artifact in a resultant image, ZTE contends that the disclosure of the asserted patents fails to teach how to relate motion of the camera to instability of the image. ZTE contends that since gyroscopic sensors measure rotational velocity, it is unclear how that measurement would be converted into pixel displacement. *Id.* (citing Mansoorian Decl. at ¶ 55).

[*728] In its reply, Maxell contends that ZTE's response largely focuses on whether the patent sufficiently describes how the image instability is calculated and that this inquiry has no bearing on whether the "image instability detector" connotes a sufficiently definite structure or class of structures. **[**129]** Docket No. 106 at 16.

Maxell contends that Dr. Madisetti explained that the skilled artisan "would understand that 'instability'. . . would refer to the movement of the camera, as measured by a gyro sensor, accelerometer, or similar device." *Id.* (citing Madisetti Decl. at ¶ 48 (describing instability "relating to vertical and horizontal shifts in effective pixel area . . . due to vertical and horizontal movement of the camera")). Maxell also argues that "detector" describes a sufficiently definite class of structures, and "image instability" in this context would be readily understood by a person of ordinary skill in the art. *Id.*

ZTE's expert provides a conclusory statement that the term does not connote structure to one skilled in the art, followed by three paragraphs acknowledging that image stabilization techniques and systems were known in the art, including systems that move an image sensor to compensate for unwanted movement. ZTE's expert also states in conclusory fashion that, although the specification teaches using gyro sensors to detect vertical image-unstability and lateral image-unstability, the specification fails to show how the unstability is detected and measured. Mansoorian **[**130]** Decl. at ¶¶ 46-50.

ZTE's evidence fails to meet ZTE's burden to overcome the presumption that the term is not a means-plus-function term. As noted by Maxell, the term "detector" has generally been found to reflect structure. *See* *Personalized Media, 161 F.3d at 705*; *Raytheon Co., 2017 U.S. Dist. LEXIS 89342 at *69-70*. Further, the specification provides clear reference to specific structure to detect unstability by disclosing the use of gyro sensors to detect movement: "16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively." '729 Patent 4:31-4:35. As ZTE's expert has agreed that camera stabilization techniques and systems are known and the specification provides discussion of detecting vertical image-unstability and lateral image-unstability with gyro sensors, it is clear that "image instability detector" provides a definite statement of structure. Further, as noted by Maxell's expert, the disclosure of unstability is extensive:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction **[**131]** of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11-28. In light of the disclosure in the specification and the accepted understanding of those in the art, the analysis of the specification by Maxell's expert (and the extrinsic evidence regarding the **[*729]** understanding of one skilled in the art regarding the use of gyro sensors and "unstability" presented by Maxell's expert) is more reliable compared to the mere conclusions of ZTE's expert. *See* Madisetti Decl. at ¶¶ 47-49.

At the oral hearing, Maxell agreed **[**132]** to the Court's construction presented below.

The Court construes "an image stability detector" to mean "a detector, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera."

24. "an amount of image-instability of the camera" ('729 Patent claim 1)

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ZTE contends that it is unclear what the "amount" corresponds to: pixels, quality of portions of the image impacted by motion or quality of the picture as a whole.

Maxell contends that, upon reading the specification of the '729 Patent, a person of ordinary skill in the art

would recognize that "an amount of image instability of the camera" refers to the amount of vertical or horizontal movement of the camera that causes corresponding instability or shifting in a generated image. Docket No. 95 at 47 (citing Madisetti Decl. at ¶¶ 46-47). According to Maxell, the patent describes that the amount of instability can be represented or measured in number of pixels and that the patent discloses that a decision circuit 17 "checks the received information for the amount **[**133]** and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions" *Id.* (citing '729 Patent 7:12-17). Maxell states that the patent also explains that "[b]ased on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability." *Id.* at 7:18-20

Maxell argues that the description of using a gyro sensor to measure image instability would inform a person of ordinary skill that "an amount of image instability" refers to an amount of shift caused by vertical and/or horizontal movement of the electric camera and representable by a number of pixels on the light receiving surface of the image sensor. *Id.* at 47-48 (citing Madisetti Decl. at ¶¶ 49).

In response, ZTE contends that its arguments for indefiniteness of the "image-instability detector" term apply to this term. Docket No. 100 at 40. ZTE further contends that the phrase "an amount of image-instability" is unclear because even assuming that the patentee used this phrase to mean "motion artifact" present in the resultant image, one of ordinary skill would be left guessing whether the claim meant **[**134]** the total number of pixels disturbed in the image, the quality degradation of the sections of the image impacted by motion artifact, or the overall appearance of the image as a whole. *Id.* ZTE contends that the specification is silent on the meaning of "image instability." *Id.* ZTE contends that, as explained by Dr. Mansoorian, gyroscopes measure a rate of rotation (angular velocity or speed) around x, y, and z axis. *Id.* (citing Mansoorian Decl. at ¶ 54). ZTE argues that there is no relationship between the specification's "vertical image-unstability and lateral image-unstability," and the claimed image instability discussed in the specification. *Id.* (citing Mansoorian Decl. at ¶¶ 54-55). ZTE contends that one of ordinary skill is left **[*730]** wondering, for example, if a lateral speed of 1 inch per second measured by the lateral gyroscope is related to any number pixel offset in the motion artifact of the resultant image. *Id.* ZTE also contends that one would be left wondering how this decision circuit would convert angular velocity of a gyroscope into a number of pixel displacement. Docket No. 100 at 40.

ZTE argues that the "amount" must be limited to some particular amount of instability. However, **[**135]** the term as drafted only requires an image-instability detector, configured to detect "an amount of image-instability of the camera." The explicit claim language is not limited to a particular pixel count, angularly velocity, lateral speed, etc. As discussed above, the patent describes:

> Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in FIG. 3 and **[**136]** the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

'729 Patent 7:11-28. The ability to measure orientation is consistent with this passage cited above, where the information obtained by the gyro sensors is checked for the amount and direction of the image-unstability. The decision circuit 17 then converts the amount and direction detected by the gyro sensors into the number of pixels in the vertical and horizontal directions that the effective pixel area needs to be shifted to cancel the image instability. *See Id.* In context of the specification, the claimed instability of the camera clearly refers to the movement of the camera as sensed by the gyro sensors. Maxell's construction comports with the specification as to what is meant by the amount of instability.

The Court construes "an amount of image-instability of the camera" to mean "an amount of instability caused by vertical and/or horizontal movement of the electric

camera"

25. "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" [137] ('729 Patent claim 1)**[9]

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The parties dispute whether the last portion of the term must be a shift "in a **[*731]** direction that cancels the image-instability."

Maxell notes that it believes the plain and ordinary meaning is sufficient, but Maxell has agreed to "adopt ZTE's construction so long as the unduly limiting language ('in a direction that cancels the image-instability') is removed." Docket No. 95 at 48. According to Maxell, while the language ZTE adds appears in the specification alongside the other language that forms ZTE's proposed construction, the extra language adds an unnecessary limitation to the claims, importing a particular embodiment. *Id.* Further, Maxell contends that the patent does not equate "correction of image-instability" to "cancellation of image-instability." Maxell notes **[**138]** that an objective of the patent is to "reduce[] image quality degradation" but not necessarily cancel image quality degradation. (citing '729 Patent 3:10-15).

ZTE contends that the Court should adopt its construction because, while the specification is silent on exactly how to convert the output of the gyroscopes into a specific pixel count, it does state that in order to correct the purported image instability, the pixels must be shifted in a direction that cancels the image unstability. Docket No. 100 at 41 (citing '729 Patent 7:11-21).

The claim language in question recites "correct the image-instability." ZTE argues for a particular manner of such correction, "shifted in a direction that cancels the image-instability," relying on the following language in the specification:

> the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability.

'729 Patent 7:19-22. Though the particular shift technique cancels instability and "can correct the image-unstability," ZTE has pointed only to an embodiment and has not pointed to any language of lexicography, disclaimer or disavowal mandating that the correction **[**139]** must cancel all instability. *See* GE Lighting Solutions, 750 F.3d at 1309; Cordis Corp., 561 F.3d at 1329; Arlington Indus., 632 F.3d at 1254 ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, at least one passage of the specification references "reduced image quality degradation" as opposed to canceling degradation. '729 Patent 3:10-15. ZTE has not established sufficient grounds in the intrinsic record to import the particular shift technique described in the specification.

The Court construes "to change a position of the second effective set of pixels according to the amount of image-instability detected by the image-instability detector, in order to correct the image-instability" to mean "based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability."

26. "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" ('729 Patent claim 1)[10] **[*732]**

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The parties dispute whether the term is a means-plus-function term and limited to a television or other screen compatible with NTSC or PAL.

Maxell contends that the mere use of the word "unit" in this term does not, without more, make "display unit" a means-plus-function term. Docket No. 95 at 49. Maxell also contends that the claim language denotes sufficiently definite structure by stating how the "display unit" operates: it displays an image based on corresponding image signals. *Id.* at 49 (citing Free Stream, 2017 U.S. Dist. LEXIS 46921, 2017 WL 1165578, at *25).

[9] The parties did not provide oral argument for this term.

[10] The parties did not provide oral argument for this term.

Maxell also contends that the '729 Patent provides examples of a "display" in the form of a "display screen" (Abstract) and a "television monitor" (1:33-34). Maxell contends that from the claim language and from the description in the specification, one skilled in the art would know that "display unit" refers to a definite class of structures, namely, devices that can display images. *Id.* (citing Madisetti Decl. at ¶¶ **[**141]** 52-54).

ZTE responds that the claim doesn't contain sufficient structure to do the function of displaying the image. Docket No. 100 at 41. ZTE contrasts claim 1 of the '493 Patent, which ZTE alleges includes the requisite structure for displaying the image, with claim 1 of the '729 Patent, which ZTE alleges does not include the requisite structure.

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Id. at 41-42.

ZTE contends that Maxell's reliance on *Free Stream* is unavailing because, in contrast to the device construed in *Free Stream*, here, the claim does not include reference to a display screen, structure required for a display unit to work. *Id.* at 42. ZTE contends that the specification discloses that the structure that performs the function of displaying an image must include a display screen of a television system or other screen compatible with NTSC or PAL formats. *Id.* at 42-43 (citing '729 Patent 1:32-44, 10:19-22).

In its reply, Maxell contends that ZTE alleges that the addition of "with a display screen" transforms a limitation into one with sufficient structure. **[**142]** Maxell contends that a person of ordinary skill in the art would associate "display unit" with a class of structures regardless of whether these additional words are part of the claim. Docket No. 106 at 17 (citing Madisetti Decl. at ¶¶ 51-54).

[*733] ZTE again argues that *Williamson* would require the claim term to include all the operable components of a display unit. However, as noted above, that is not the standard provided by *Williamson*. Again, the question is whether the term describes sufficiently definite structure to one of ordinary skill in the art to connote structure. ZTE has not shown that one skilled in the art would not understand that the term connotes definite structure. ZTE's acknowledgement that "a display unit with the display screen" is known structure demonstrates as much. The specification clearly teaches that a display unit is a class of structures, providing examples such as "display screen" (Abstract) and a "television monitor" (1:33-34).

Finally, ZTE's expert testimony also indicates that such a term would be known to represent a class of devices that display images such as "anything from a television display, cell phone display, and computer monitor." Mansoorian Decl. **[**143]** at ¶ 57. Thus, the expert recognizes that the term is not unbounded but reflects known structures. In addition to the specification disclosure, the extrinsic evidence about the understanding of those skilled in the art further supports Maxell's position that the term is understandable as structure.

The Court construes the term "a display unit configured to display an image corresponding to the image signals formed by the signal processing unit" to have its plain and ordinary meaning.

H. The '193 Patent

The '193 Patent relates generally to cellular telephones, more specifically to a cellular telephone with improved means for controlling transmitter output power, while reducing current consumption to conserve battery life. '193 Patent 3:12-28. The Abstract of the '193 Patent recites:

> A cellular telephone receives a first communication signal from a cell-site station and transmits a second communication signal to the cell-site station. The cellular telephone includes an antenna, a duplexer, a receiver, an encoder/decoder apparatus, an acoustic transducer, a transmitter and a controller. The receiver is connected to the antenna through the duplexer. The receiver converts the first communication signal into a voice signal code, and outputs **[**144]** a signal indicating an intensity of the first communication signal. The transmitter is connected to the encoder/decoder apparatus and to the antenna through the duplexer. The receiver converts the input voice code signal from the encoder/decoder apparatus into the second communication signal. The controller is connected to the receiver and the transmitter. The controller controls amplitude of the transmitter corresponding to said intensity of the first communication signal. The transmitter includes a variable amplitude amplifier and a power amplifier means, and the controller includes a central processing unit and a memory. The controller controls a gain of the variable amplitude amplifier

and a bias condition of the power amplifier means according to a function stored in the memory.

'193 Patent Abstract. More particularly, the '193 Patent describes a cellular telephone (Figure 1) having a transmitter (200), including a variable amplitude amplifier (230) and a power amplifier (250) for amplifying a transmit power to a desired level, and a controller (300) for controlling the transmit power by controlling the gain of the variable amplitude amplifier and the bias condition of the power amplifier. '193 Patent 5:16-6:54, **[**145]** Figures 1 and 2. Instead of supplying a fixed bias condition (e.g., Bn) to the power amplifier, the '193 Patent defines bias conditions for the power amplifier as a function of predetermined gain values for the variable amplitude amplifier, and stores corresponding sets of gain and **[*734]** bias values in memory (e.g., G1B1, G2B2. . . GnBn). '193 Patent 6:6-43, Figure 4. By specifying different bias values for different gain values, the controller can select a bias condition that satisfies a particular transmit power, while reducing current consumption in the power amplifier. '193 Patent 6:43-54.

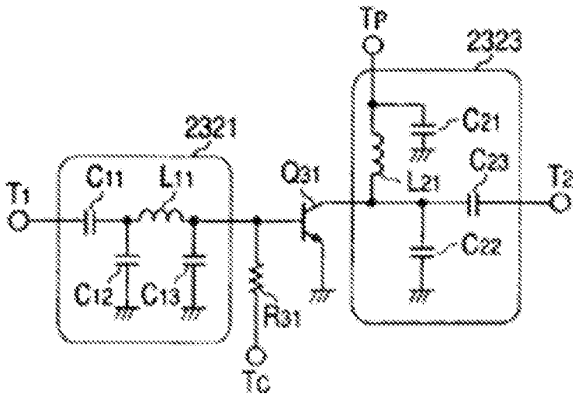
28. "variable amplitude amplifier" ('193 Patent claims 1 and 7)

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ZTE contends that the claims should be limited to the amplifier design of Figure 1 allegedly because that is the embodiment that fits within the claim limitations.

Maxell contends that ZTE limits the term to the embodiment of amplifier 230 of Figure 1 and excludes the embodiment of Figure 3. Docket No. 95 at 52. Maxell contends that Figure 1 discloses an embodiment of a variable amplitude amplifier **[**146]** 230 that consists of two stages of amplification formed by amplifiers 232 and 234. *Id.* (citing '193 Patent 5:19-21, 5:31-33, 5:40-45). According to Maxell, the embodiment of a variable amplitude amplifier disclosed in Figure 3 consists of a single stage of amplification formed by a single amplifying element, transistor Q31. *Id.* (citing '193 Patent 6:56-57 ("[i]n this embodiment, a transistor is employed as an amplifying element Q31")). Further, Maxell contends that the term "variable amplitude amplifier" would be readily understood by a person of ordinary skill in the art. *Id.* at 53 (citing Docket No. 95-3 (Caloyannides Decl. A) at ¶¶ 48-50).

ZTE contends that its construction should be adopted because the embodiment of Figure 1 is the only embodiment that fits within the scope of the claims. Docket No. 100 at 45. ZTE contends that it is unclear how the amplifier of Figure 3 works or even how it would be connected to the "control signal" required in the claims. *Id.* at 45 46 (citing Docket No. 100-7 (Ding Decl.) at ¶¶ 42).



ZTE's argument focuses on Figure 3, above. According to ZTE, for the circuit in Figure 3, the specification describes T1 and T2 as the input and output terminals respectively and the power source voltage is **[**147]** connected to terminal Tp. *Id.* at 45 (citing '193 Patent 6:58-61, 7:10-12). ZTE **[*735]** contends that the specification states that "transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 45-46. The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current" but it is silent on how the control signal reaches the Q31 or how it would control the output power if it did reach transistor Q31. *Id.* at 46 (citing '193 Patent 7:15-20, and Ding Decl. at ¶ 44). Specifically, ZTE contends that not only does the specification not disclose how the control signal reaches transistor Q31 it also fails to teach how that signal would vary the gain of the circuit. *Id.*

ZTE further contends that the term "Variable Amplitude Amplifier" has no accepted meaning in the field and would not be known to one of ordinary skill. *Id.* at 47 (citing Ding Decl. at ¶¶ 45-48).

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "(1) when a patentee sets out a definition and acts as his own lexicographer or (2) when the patentee disavows the full scope of the claim term either in the specification or **[**148]** during prosecution." *Golden Bridge Tech., 758 F.3d at 1365 (Fed. Cir. 2014)* (quoting *Thorner, 669 F.3d at 1365*); *see also GE*

Lighting Solutions, 750 F.3d at 1309 ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions, 750 F.3d at 1309*. To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp., 561 F.3d at 1329*; ***see also*** *Thorner, 669 F.3d at 1366* ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

ZTE has not pointed to any such clear lexicography, disclaimer or disavowal. "[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction." *Arlington Indus., Inc., 632 F.3d at 1254*.

As to the meaning of the term, the parties and their experts dispute whether the term has meaning to one skilled in the art. It is noted that the background of the specification references a variable **[**149]** amplitude amplifier in the prior art CDMA standard. '193 Patent 1:23-35, Figure 11. Further, the background of the specification references the use of a variable amplitude amplifier for controlling bias conditions of a FET according to transmission power, as described in a Japanese patent document. '193 Patent 1:60-2:1. Further, Maxell's expert points to two prior art patents which reference the term variable amplitude amplifier. Caloyannides Decl. A at ¶ 42. Further, Maxell's expert identifies three of the cited patents on the face of the '193 Patent as providing example figures of variable amplitude amplifiers. *Id.* at ¶ 48. ZTE's expert's primary challenge to these statements is an assertion that the two prior art patents identified in Caloyannides Decl. A at ¶ 42 do not disclose definite structure for the amplifiers. Ding Decl. at ¶¶ 46, 48. However, that assertion does not rebut the evidence that the term is known in the art. The competing extrinsic evidence of those skilled in the art better supports Maxell's position that the term has meaning to those in the art. *See Teva Pharms. USA, 135 S. Ct. at 841 (2015)* **[*736]** (allowing courts to make subsidiary factual findings about the extrinsic evidence).

Moreover, the specification itself provides guidance as to **[**150]** the meaning. The specification provides for two descriptions of the variable amplifier 230. ZTE points to the description of Figure 1 found at 5:16-44. However, the specification provides another description of variable amplitude amplifier 230 in Figure 2 and Figure 3 at 6:1-6, 6:55-7:20. ZTE's expert attempts to discount the disclosure of Figure 3 by stating that the specification is silent on how the control signal reaches the transistor Q31 or how it would control the output power if it did reach transistor Q31. Ding Decl. at ¶ 44. However, the specification is clear: "[a] control terminal Tc is connected to the base of the transistor Q31 through a resistor R31." '193 Patent 7:5-7 (referencing Figure 3). Though ZTE argued at the oral hearing that it was unclear where the signal on Tc is provided from, the specification is clear. Figure 2 clearly illustrates that controller 300 provides an input to the variable amplitude amplifier 230. Further, the specification explains that the CPU 310 (within controller 300) "generates signals for controlling the variable amplitude amplifier 230" (5:53-54 (referencing Figure 1)), "the controller 300 controls a gain of the variable amplitude amplifier 230" **[**151]** (6:1-2 (referencing Figure 2)), "controller 300 controls the variable amplitude amplifier 230 (6:43-44 (referencing Figure 2)), and "the transistor Q31 controls the output power according to the control signal generated by the CPU 310" (7:16-18 (referencing Figure 3)).

The specification also more generally describes the operation of the variable amplitude amplifier 230 as amplifying the input signal for provision to an output. *Id.* at 5:31-40 (referencing Figure 1). This amplification is done by controlling the gain of the amplifier by the control signal from controller 300 as shown in Figure 2: "[t]he controller 300 controls a gain of the variable amplitude amplifier 230. . . ." *Id.* at 6:1-2, 3:17-22, Abstract. The controller 300 controls the variable amplitude amplifier 230 and the power amplifier means 250 based on the conditions stored in MEM 330. *Id.* at 6:43-46. "The transistor Q31 controls the output power according to the control signal generated by the CPU 310. *Id.* at 7:16-18 (referencing Figure 3). "The higher the voltage of the control signal is, the more output power is obtained due to an increase of the collector current." *Id.* at 7:18-20 (referencing Figure 3).

In context **[**152]** of the specification, it clear that the variable amplitude amplifier is not limited to the structure of Figure 1. Moreover, in context of the overall description of the passages discussed above, the variable amplitude amplifier is an amplifier whose output amplitude may be varied and that provides a variable

gain in response to a control signal.

At the oral hearing Maxell agreed to a construction similar to that adopted by the Court below. H'rg Tr. at 147:8-23.

The Court construes "variable amplitude amplifier" to mean "an amplifier whose output amplitude may be varied and that provides a variable gain in response to a control signal."

I. The '794 Patent

The '794 Patent relates generally to power management, more specifically to methods for controlling power consumption in a battery operable information processing device. '794 Patent 1:6-11. The Abstract of the '794 Patent recites:

> A power supply section includes a capacity detector capable of detecting the remaining capacity in a battery and a controller issuing power consumption reduction instructions to independently operable function devices based on usage **[*737]** priorities thereof. This allows power consumption operations to be performed such as stopping function devices with low priorities **[**153]** first based on the remaining battery capacity. As a result, power to function devices with higher priorities can be maintained. Based on the remaining battery capacity, the controller controls the operations of the function devices and uses a display to show information allowing the operator to identify operable and inoperable function devices as the battery capacity drops.

'794 Patent Abstract. More particularly, the '794 Patent allows priority levels to be set for individual function devices in the information processing device and prioritizes battery time or power consumption for function devices with higher priorities. '794 Patent 2:21-27, 3:57-4:12, Figures 8 and 9. The '794 Patent turns off power to individual function devices based on the priority levels set for the function devices and the remaining battery capacity. In this manner, a lower prioritized function device can be turned off when a first battery capacity is reached, while a higher prioritized function device remains powered. This enables function devices with higher priority to be operated for a longer period of time. '794 Patent 5:17-27.

29. "function devices(s)" ('794 Patent claim 1) "component device" / "component devices for performing different functions in the device" ('794 Patent claim [154] 9)**

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In the briefing, the parties disputed whether or not the terms are means-plus-function terms. At the oral hearing, Maxell agreed that both terms are means-plus-function terms having the same construction. *See* H'rg Tr. at 159:22-161:12.

Maxell contends that the inventors of the '794 Patent used their own terminology to refer to hardware/software components that perform specific functions in the information processing device: "function device" and "component device." Docket No. 95 at 55. Maxell notes that the patent specifically refers to "an audio communication function" as "function device A" and to "a videophone function" as "function device B." *Id.* (citing '794 Patent 1:31-32). Maxell argues **[**155]** that a person of ordinary skill in the art would recognize the structures that would perform these functions and would understand that these disclosures denote a sufficiently definite class of structures. Docket No. 106 at 20 (citing Docket No. 106-10 (Kiaei Decl.) at ¶¶ 46-49, 56). According to Maxell, the '794 Patent describes "modem functions," and exemplary "common" function devices such as a CPU and memory. Docket No. 95 at 55 (citing '794 Patent 1:19-20, 1:32-33, 6:14-15). **[*738]** Maxell contends that the modem, CPU, and memory are specific, definite exemplary structures that perform functions in the information processing device. *Id.* Maxell argues that each function device can perform a single function or a function device can perform multiple functions. *Id.* (citing '794 Patent 2:33-35). As to the CPU and memory, Maxell contends that ZTE overlooks that a "common function device" is simply a type of "function device." Docket No. 106 at 20. Maxell further points to claim 8 as making clear that a "common function device" is a type of "function device." *Id.* at 20 n. 24.

At the oral hearing when provided with a structure of "modem devices, audio communication devices and videophone devices," Maxell indicated that it agrees to such structure **[**156]** if CPU and memory are added to the structure. H'rg Tr. at 159:23-160:13. Maxell contends that the CPU and memory are part of the "common function device" and should thus be included in the construction. *Id.*

Maxell also argues that ZTE provides a function, not from the claims, but from exemplary embodiments in the

specification. Maxell contends that the function for an MPF claim should come from the claims, not from the specification. Docket No. 95 at 56 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc., 239 F.3d 1225, 1233 (Fed. Cir. 2001)* ("Under *§ 112, ¶ 6*, a court may not import functional limitations that are not recited in the claim. . .") and *Mass Engineered Design, Inc. v. Ergotron, Inc., 559 F. Supp. 2d 740, 747-48 (E.D. Tex. 2008)* ("Defendants insert limitations not cited in the claim, which is improper.")).

ZTE contends that "function device" and "component device" have no recognizable meaning to a person of ordinary skill in the art, instead generically describing literally any device that is capable of performing any function. Docket No. 100 at 48 (citing Docket No. 100-3 (Wolfe Decl.) at ¶¶ 41-42). ZTE also contends the specification does not provide any description of the terms, let alone a level of description that could impart any structural significance. *Id.* (citing Wolfe Decl. at ¶ 43).

ZTE contends that the specification citation for structure **[**157]** provided by Maxell is circular: "[t]he devices specific to the functions 1, 2 are provided through the function devices 1, 2. . . ." Docket No. 100 at 51 (citing'794 Patent 6:15-18). According to ZTE, these portions of the specification describe the "function devices" only in terms of functionality and do not provide any disclosure that one of ordinary skill in the art would recognize as a structure for performing the claimed functions. *Id.* (citing *Williamson, 792 F.3d at 1352* ("[i]f a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."); *Bosch, 769 F.3d at 1101* (finding means-plus-function "device" terms indefinite where the specification "offer[ed] no further guidance about their structures.")). ZTE contends that the only actual structure Maxell identifies is CPU and memory and that these are structures of the "common function devices" of Figure 3, not the different "function devices" or "component devices." *Id.* at 50 n. 16 (citing'794 Patent 6:14-15, Figure 3).

In response to Maxell's arguments for inclusion of a CPU in the structure, ZTE argued at the oral hearing that the *Aristocrat Techs* line of cases would require **[**158]** the inclusion of an algorithm in the structure. *See* H'rg Tr. at 162:22-163:20.

To address Maxell's objections to the functions that ZTE identifies from the specification (i.e., "modem functions" (1:20); "audio communication function (function device A) and a videophone function **[*739]** (function device B)" (1:31-32)), ZTE provides an alternative function directly from the claims: "performing different functions in the device" (for "component devices") and "performing independent functions" (for "function device"). Docket No. 100 at 49, n. 15.

As noted above, the parties are now in agreement that the terms are means-plus-function terms. As to the function, the Court finds that the actual language of each claim is the appropriate language. *See Applied Med. Res. Corp. v. U.S. Surgical Corp., 448 F.3d 1324, 1332-35 (Fed. Cir. 2006)*.

As to corresponding structure, the specification describes that the function devices can (1) perform modem functions (1:20), audio communication function (function device A) (1:30-33) and videophone function (function device B). A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc., 248 F.3d at 1311*. The focus of the "corresponding **[**159]** structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* Based on the specification disclosure, the corresponding structure linked to the claimed function includes modem devices, audio communication devices and videophone devices. The Court also notes that the unrebutted testimony of one skilled in the art is that these classes of devices are well known in the art. Kiaei Decl. at ¶¶ 46-49.

Maxell seeks to include the structure of the common function devices in the construction, but only structure that the specification "clearly links" to the claimed function is appropriate. The functions in question are "performing independent functions" and "performing different functions." In context of the specification, the devices that perform such differing and independent functions are the Function Device 1 (110) and Function Device 2 (111) of Figures 1, 2, 3, 6, 10, and 11. '794 Patent Figures 1, 2, 3, 6, 8, 10, and 11, 1:30-45, 1:55-66, 3:42-43, 3:57-4:12, 4:18-22. The "common function device" of Figure 3 is described differently: "an information **[**160]** process device 301 includes a common function device 302 needed by both the function device 1 (110) and the function device 2 (111)." *Id.* at 6:9-11. Further, the specification explicitly states: "[e]xamples of a common function device 302 include

CPU and memory. The devices specific to the functions 1, 2 are provided through the function devices 1, 2, and control of these are provided through the common CPU and memory." *Id.* at 6:14-18. The functions of the common function device 302 are not independent of the Function Device 1 (110) and Function Device 2 (111), but rather tied to the functions of these devices (the common device is "needed by both" function devices and provides "control" of the function devices). In context of the specification as a whole, it is clear that the functions of the common function device are not the claimed functions.

The claims themselves further provide clear indication that the recited "function devices" and "component devices" of the independent claims are different than the common device. Dependent claim 8 adds to claim 1: "further comprising a function device common to a plurality of independent functions" and dependent claim 14 adds to claim 9: "further **[**161]** comprising a component device common to a plurality of independent functions." In conformance with the specification, these claims make clear that the "common" device is not one of the devices recited in the independent claims. *See Phillips, 415 F.3d at 1314* (other claims can also aid in determining the claim's meaning, because claim terms are **[*740]** typically used consistently throughout the patent and differences among the claim terms can also assist in understanding a term's meaning).

In light of the claims and specification, Maxell has not shown the common function device "clearly links or associates" with the claimed independent and differing functions. *See Medtronic, Inc., 248 F.3d at 1311*. As such structure is not linked to the claimed function, the inclusion of a CPU and memory is inappropriate. Further, ZTE's arguments for inclusion of an algorithm based on the presence of a general purpose processor within Maxell's asserted construction are, thus, not appropriate for the structure adopted below by the Court.

The Court construes "function devices equipped with independent functions" to mean:

Function: equipped with independent functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

The Court **[**162]** construes "component devices for performing different functions" to mean:

Function: performing different functions

Structure: modem devices, audio communication devices and videophone devices, or equivalents thereof.

J. The '491 Patent and '695 Patent

The '491 Patent and '695 Patent share a substantially similar specification. The '695 Patent is a continuation of U.S. Patent No. 7,447,241, which is a continuation of the '491 Patent. The '491 Patent and the '695 Patent relate to audio decoding, and more specifically, to an audio decoder in which a plurality of decoding program codes are stored in an external rather than internal, read only memory (ROM). The Abstract of the '491 Patent recites:

> A multiplexed audio data decoder apparatus is provided in which integration of an audio decoder is easy, and has a high flexibility when the number of the formats to be processed is increased or when the specification is changed. In an external ROM **60** there are accumulated a plurality of decoding program codes corresponding to respective plural methods for compressing and encoding. A controller means **50** transfers the decoding program code corresponding to the method for compressing and encoding after changing thereof, from the external ROM **60** to an internal RAM **25**. A DSP **22** starts decoding processing by using the decoding **[**163]** program code which is transmitted into the internal RAM **25**.

'491 Patent Abstract. More specifically, the '491 Patent and the '695 Patent note that conventional digital signal processor (DSP) based audio decoders store decoding program codes within a built-in ROM, which consume considerable space and could not be easily changed to include new or additional encoding formats. '491 Patent 1:65-2:10. To improve flexibility, the '491 Patent and the '695 Patent store decoding program codes within an external ROM, which can be interchanged or updated with new decoding program codes. '491 Patent 2:11-51, 8:1-15, Figure 1. The '491 Patent and the '695 Patent also provide a controller (*e.g.*, a CPU) that detects a change in the encoding format and transfers appropriate decoding program codes stored within the external ROM to an internal RAM, so that the DSP can start the decoding process using the appropriate decoding program codes stored in the internal RAM. '491 Patent 2:38-45, 5:31-67, 6:66-7:54, Figures 1, 4, and 5. This enables the audio decoder apparatus described in the '491 Patent and the '695 Patent to have the flexibility to process audio signals of numerous formats without

requiring a large built-in memory.

[*741] 18. "controller means for detecting change in said method of compression and encoding, and for transferring [164] the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2)**[11]

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The parties dispute whether the CPU is "external" and "connected via a bus between a read only memory and the first memory." The parties further dispute whether the algorithm of the processor includes all of Figures 4 and 5 or just particular steps of the flow charts of those figures.

Maxell objects to ZTE's construction as limiting the CPU to being "external" and "connected via a bus between a read only **[**166]** memory and the first memory." Docket No. 95 at 36. Maxell contends that ZTE is seeking to limit the scope of the claims to a preferred embodiment and that that ZTE's construction sits in tension with the natural language of the claim itself. *Id.* at 37. Maxell contends that the claims are directed **[*742]** to a "multiplexed audio data decoder apparatus" that "comprises" the "controller means" but that ZTE would require that the "controller means," which the claim language mandates to be included in the multiplexed audio data decoder apparatus, be a CPU that is external to the multiplexed audio data decoder apparatus. *Id.* at 37.

Maxell contends that the external CPU disclosed in the specification is used in an embodiment in which an exemplary multiplexed audio data decoder apparatus incorporates a DSP that is placed inside an audio decoder 20 that constitutes a self-contained unit which is integrated into the multiplexed audio data decoder. *Id.* (citing '491 Patent 2:4-6 ("integrate the audio decoder including the DSP"); 2:11-13 ("a multiplexed audio data decoder apparatus and a receiver apparatus, in which integration of the audio decoder is easy")). Maxell contends that, accordingly, the term *external* merely describes a **[**167]** location of the CPU (*e.g.*, CPU 50) with respect to such integrated audio decoder. Maxell contends that as shown in Figures 1, 6, and 10-13, the patent describes a CPU 50 that is external to an audio decoder (20) yet still part of a multiplexed audio data decoder apparatus. Docket No. 106 at 13 (citing '491 Patent Figure 1, 4:35-43 ("The multiplexed audio data decoder apparatus according to the present embodiment comprises. . . an audio decoder 20, [and] an external CPU 50. . .")).

Maxell contends that the claimed "multiplexed audio data decoder apparatus" does not recite such an audio decoder and does not require the CPU to be external to any specific structure. Docket No. 95 at 38. Maxell further contends that the specification of the '491 Patent does not associate the location (external or otherwise) of the CPU 50 with the performance of the recited function. *Id.*

ZTE contends that even Maxell argues that the corresponding structure is shown in Figures 1, 4-6 and 9. ZTE contends that each of those embodiments uses an "external" CPU. ZTE contends that no embodiment of the patent ever uses an internal CPU for the controller function. Docket No. 100 at 32-33 (citing Figure 1 ("external CPU 50"), Figure 6 ("external **[**168]** CPU 50"); Figure 10 (same); Figure 11 (same); Figure 12 (same); Figure 13 (same)).

ZTE responds that means-plus-function claims are necessarily limited by the corresponding structure in the specification. Docket No. 100 at 32-33. ZTE contends that there is no embodiment, preferred or otherwise, in the patent that does not use an external CPU. *Id.* at 33. ZTE notes that the specification expressly states that the "multiplexed audio decoder apparatus according to the present invention comprises . . . an external CPU 50." *Id.* (citing '491 Patent 4:35-39).

ZTE contends that the use of an external CPU for the controller is not unrelated to the recited function but is in fact a primary basis of the alleged invention. *Id.* (citing '491 Patent 1:49-2:10 (described problems with prior art "built-in" ROM)).

[11] The parties' final Joint Claim Chart did not list claim 2. At the oral hearing the parties agreed that the term in claim 2 was also at issue. *See* H'rg Tr. at 118:23-119:1. Maxell also agreed to a function that matches the explicit claim language. *See Id.* at 113-114.

ZTE further argues that Maxell's construction ignores the fact that the CPU is connected via a bus between a read only memory [ROM] and the first memory. *Id.* According to ZTE, this is the only corresponding structure disclosed in the patent for performing the "transferring portion" of the "controller means" function. *Id.* (citing '491 Patent Figure 1 (DB, external CPU 50, external ROM 60, Internal RAM 25)).

[*743] Additionally, ZTE argues that **[**169]** Maxell seeks to omit certain steps in the disclosed flow charts without providing any reasons for doing so. Docket No. 100 at 34.

Under 35 USC §112, ¶6, means-plus-function terms are limited the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson, 792 F.3d at 1347.* Construing a means-plus-function limitation involves multiple steps. "The first step . . . is a determination of the function of the means-plus-function limitation." *Medtronic, Inc., 248 F.3d at 1311.* "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

The specification discloses that "FIG. 1 is a block diagram of showing an outlook construction of a **multiplexed audio data decoder apparatus**, according to an embodiment of the present invention." '491 Patent 3:42-44 (emphasis added). This figure and the corresponding disclosure relating to the figure clearly establishes that the "apparatus" is comprised of multiple components, including some that are external to others. For example, the entire "apparatus" includes a digital signal processor 22 and internal RAM 25 (both within audio decoder 20) and a demultiplexer **[**170]** 10, a data bus (DB) and external CPU 50 and external ROM. *Id.* Figure 1, 4:34-43. Similar disclosures are made for Figures 6, 10, 11, 12 and 13. Maxell has not identified any embodiment in which the CPU is not external to at least some of the other components of the audio data decoder apparatus. Further, the patent describes problems that occur when all the components are "built-in: together. *Id.* at 1:26-2:10. The specification describes "multiplexed audio decoder apparatus according to the present invention comprises . . . an external CPU 50." *Id.* 4:35-39. The specification refers to the "external CPU" more than 15 additional times and also as mentioned above in the figures.

Maxell argues that the claim is to the "apparatus" and the elements of the apparatus cannot be "external" to the apparatus itself. Maxell reiterates such contentions due to the unnatural reading of "external" asserted by ZTE (discussed below). As shown, the "apparatus" includes multiple components, some external to others, but the "apparatus" is the collection of these components: The CPU is not "external" to the apparatus but, instead, merely external to other components.

At the oral hearing, ZTE seemed to indicate **[**171]** that "external" meant external to the very apparatus that was claimed—specifically, external to the claimed multiplexed audio data decoder apparatus. H'rg Tr. at 119:17-122:23, 170:13-172:8. Such an interpretation would ignore the clear teaching of the specification discussed above. The specification gives the context that makes clear that "external" is not external to the multiplexed audio data decoder apparatus. In context of the specification and the elements recited in the claim, the CPU is external to the digital signal processor and the first memory.

At the oral hearing, Maxell agreed to a construction that makes clear that "external" is not with reference to the apparatus within which the CPU is a claimed element, but rather external to the digital signal processor. H'rg Tr. at 170:17-23.

[*744] As to the algorithm, Maxell seeks to pick and choose steps of the algorithms shown in Figures 4 and 9, including the step of determining if there is a format change or not (step S6) and the "transmit decoding process code" step S7 when change is detected in step S6. The specification states:

> The FIG. 4 shows the program switching or changing process focusing mainly on the algorithm thereof, and **[**172]** the FIG. 5 shows it focusing mainly on the transfers of signals between the constructive blocks thereof. Further, in Figures 4 and 5, the same reference numerals indicate the steps in the process, being same to each other

'491 Patent 6:30-35. Further,

> The FIG. 9 shows the program switching process according to the present embodiment, mainly focusing on the algorithm thereof. However, the same reference numerals indicate the same process steps shown in Figures 4 and 5.
> z

Id. at 9:28-31. The algorithm that corresponds to the claimed function includes the entire algorithms of Figures 4 and 9. Figure 5 shows these steps in relation to the various system components, however, the algorithm itself is described in Figures 4 and 9.

The Court construes "controller means for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 1) / "controller means for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression **[**173]** and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory" ('491 Patent claim 2) to mean:

Function Claim 1: for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Function Claim 2: for transferring said plural decoding program codes from said read-only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory

Structure: a CPU that is within the audio decoder apparatus, the CPU being external to the digital signal processor and the first memory (Figures 1, 6, 10, 11, 12, or 13) and being connected via a bus between a read only memory and the first memory, running the algorithm set forth in the flowcharts of Figure 4 and Figure 9 and the corresponding citations **[**174]** in the specification at 6:30-7:54 and 9:28-44, or equivalents thereof.

19. "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" ('491 Patent claims 7 and 8)[12] [*745]

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The parties dispute whether the term is indefinite because the claim does not recite to what component the demultiplexer inputs the audio data sequence.

Maxell contends that ZTE has conceded that the plain meaning is understandable by agreeing to the plain and ordinary meaning of the term "a demultiplexer for extracting the one audio data sequence . . . ," as recited by claims 1, 2, and 9. Docket No. 95 at 38. Maxell contends that a "demultiplexer" is a well-known term to those of skill in the art that refers to a particular component. *Id.* at 38-39 (citing Docket No. 95-2 (Maher Decl. A) **[**175]** at ¶¶ 25, 33-34).

Maxell contends that the claim need not specify a precise location for the demultiplexer's output in order for a person of ordinary skill in the art to understand its scope. *Id.* at 39. Maxell contends that the claim specifies the operation of the demultiplexer (sending an audio data sequence to another input) and a person of ordinary skill in the art would understand the scope of this claim with reasonable certainty. Docket No. 106 at 13-14 (citing Docket 106-8 (Maher Decl. B) at ¶¶ 25, 28-32).

Maxell contends that ZTE's alternative construction merely attempts to read into the claim exemplary embodiment without support for such incorporation. Docket No. 95 at 39. Maxell contends that ZTE has not pointed to anything in the intrinsic record that supports an interpretation of "demultiplexer" whereby the "demultiplexer itself. . . extracts the method of compression and encoding." *Id.*

ZTE responds that the claim does not identify into what this item is inputted. Docket No. 100 at 34. ZTE contends that, thus, the breadth and scope of the claim cannot be determined as the claim does not recite an operable device. *Id.* (citing *Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1371 (Fed. Cir. 2014)*). According to ZTE, the only possible language in the claim **[**176]** that could correspond to this input is the last clause which recites "a digital signal processor [DSP] for decoding said one audio data sequence," but this is inconsistent with the specification, as in all disclosed embodiments in the output of the demultiplexer is inputted to a frame sync, not the DSP. *Id.* (citing '491 Patent Figures 1, 6, 10-13). ZTE contends this creates ambiguity that renders the claim invalid under *Section 112(2)*. *Id.*

ZTE contends that, alternatively, the limitation should be construed consistently with the specification such that the demultiplexer is inputting to the Frame Sync. ZTE also contends that, based on the additional requirement

[12] The parties did not provide oral argument for this term.

in the claim that the demultiplexer is also for "extracting a method of compression and encoding of said one audio data sequence" this must also be part of the claim construction. *Id.* (citing '491 Patent 12:59-63).

As claimed, the claim merely requires the demultiplexer to provide an input, and further requires that input is the "one audio data sequence." ZTE contends that the fact that the demultiplexer provides an input requires the claim to include ***what*** is receiving the input. The claim language **[*746]** itself does not make such a mandate and the claim language is understandable **[**177]** to just require the demultiplexer to provide an input that is the "one audio data sequence." The competing extrinsic evidence of those skilled in the art also better supports Maxell's position that the term is understandable as drafted. *See* Teva Pharms. USA, 135 S. Ct. at 841 (2015) (allowing courts to make subsidiary factual findings about the extrinsic evidence).

The Court construes the term "a demultiplexer for inputting one audio data sequence which is compressed and encoded, being selected from a plurality of audio data sequences which are multiplexed" to have its plain and ordinary meaning.

30. "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" ('695 Patent claims 1 and 4)

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The parties' dispute centers on whether "controller" connotes structure such that the term is not subject to means-plus-function interpretation.

Maxell contends that "controller" connotes sufficient structure to a person of ordinary skill in the art, noting that the IBM Dictionary of Computing defines "controller" as "[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole." Docket No. 95 at 57-58 (quoting Docket No. 95-5 (IBM Dictionary of Computing) at 145). Maxell also notes that multiple **[**179]** district courts have held that "controller" connotes sufficient structure to avoid a means interpretation. (citing Sound View Innovations, LLC v. Facebook, Inc., 2017 U.S. Dist. LEXIS 78412, 2017 WL 222177, at *5 (D. Del. May 19, 2017) ("'Controller' may be a class of structures, rather than one specific structure, and may be defined with functional **[*747]** terms, but that does not make it means-plus-function."); Honeywell Int'l Inc. v. Universal Avionics Sys. Corp., 264 F. Supp. 2d 135 (D. Del. 2003) ("controller" is not an MPF term); 911EP v. Whelen Eng'g Co., Inc., 512 F. Supp. 2d 713, 727 (E.D. Tex. 2007) ("The claim language does not merely describe a controller, but adds further structure by describing the operation of the controller. . . . Accordingly, the description of the operation of a controller is sufficient to avoid section 112 P 6."); SynQor, Inc. v. Artesyn Techs., Inc., 2010 U.S. Dist. LEXIS 74808, 2010 WL 2991037, at *23 (E.D. Tex. Jul. 26, 2010), ***aff'd***, 709 F.3d 1365 (Fed. Cir. 2013) (finding that "control circuitry determining . . ." is not an MPF term)).

Maxell also objects to ZTE's corresponding structure seeking to limit the scope of the claims to a preferred embodiment. Docket No. 95 at 58.

ZTE contends that the parties agreed that the nearly identical term in the '491 Patent ("controller means") was an MPF term governed by Section 112(6). Docket No. 100 at 52. As to the prior cases, ZTE contends that all but one of those cases, were decided prior to the Federal Circuit's *en banc* decision in *Williamson*, which removed the heavy presumption against Section 112(6) application where "means" is not recited. *Id.* ZTE contends that the **[**180]** sole remaining case is *Sound View*, which ZTE submits was decided incorrectly. *Id.* ZTE contends that *Williamson* itself is a close analogue as the term in that case was "distributed learning control module." Williamson, 792 F.3d at 1350.

As to the IBM dictionary, ZTE contends that the definition ("[a] device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole") is inconsistent with the recited requirements of the "controller" claim limitation at issue here. *Id.* at 52-53. ZTE states that here the controller must function to (1) detect whether the method of compression and encoding has changed, (2) download particular code from outside the memory to the memory. *Id.* at 53. ZTE contends that these claim limitation steps are not part of the "ordinary meaning" of controller as defined in the

IBM dictionary. *Id.* Thus, ZTE contends that the claim itself recites insufficient structure to meet the claimed function and is thus subject to Section 112(6). *Id.*

ZTE contends that once application of Section 112(6) is established, the claim construction is almost identical to the "controller means" discussed above with respect to the '491 Patent. *Id.* at 53.

[181]** In its reply, Maxell contends that as to *Sound View Innovations*, ZTE fails to explain why that case is supposedly "inapplicable" or why it was "wrongly decided." Docket No. 106 at 20.

There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. Masco Corp., 303 F.3d at 1326; Williamson, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See* Media Rights Techs., Inc., 800 F.3d at 1372 (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing Williamson, 792 F.3d at 1349)); Robert Bosch, LLC, 769 F.3d at 1099; Williamson, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); Masco [*748] Corp., 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); Personalized Media Communications, L.L.C., 161 F.3d at 704 (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely **[**182]** the recited function . . . even if the claim uses the term means." (internal quotation marks and citation omitted)).

The lack of the use of "means" creates a presumption that the term is not a means-plus-function term. ZTE has provided no evidence to support the notion that "controller" is merely a nonce word. ZTE also has not established that in context of the specification, the term does not connote structure. The specification refers to "controller 50" which elsewhere is referred to as "external CPU 50," a clear reference to specific structure. '695 Patent Abstract, 4:41, Figure 1. The patent also references "micro-controller" in the context of a class of structure. *Id.* at 1:38-42. In this context, the specification makes clear that "controller" connotes structure. In light of the teaching of the specification, "controller" connotes sufficiently definite structure to avoid a means-plus-function term. Additionally, as noted by Maxell, the extrinsic evidence indicates that "controller" has a structural meaning. The Court finds this external evidence also supports the Court's conclusion that "controller" connotes a class of structures. Finally, the Court notes that this finding is consistent with **[**183]** multiple courts that have found that "controller" connotes structure that does not fall with the means-plus-function analysis.

The Court finds that the term "a controller for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding, to said memory from outside of said memory" has its plain and ordinary meaning. .

SIGNED this 31st day of January, 2018.

/s/ Robert W. Schroeder III

ROBERT W. SCHROEDER III

UNITED STATES DISTRICT JUDGE

Table1 (*Return to related document text*)

Term	Agreed Construction
"at least approaches"	Plain and ordinary meaning
('443 Patent claim 1)	
"simultaneously"	Plain and ordinary meaning
('292 Patent claims 1 and 2)	
"A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit . . . , said mobile communication terminal device comprising" / "A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit . . . , said mobile communication terminal device comprising"	The preambles of claims 1 patent are limiting. patent are limiting.
('517 Patent claims 1 and 9)	
"A connection control method for selecting one base station, **[**15]** to which a terminal is to connect, from a plurality of base stations in a wireless communication system" / "A wireless terminal for selecting a connection destination base station from a plurality of base stations in a wireless communication system"	The preambles of claims 1 and 11 of the '139 patent are limiting.
('139 Patent claims 1 and 11)	
Preambles	The preambles of claims 1 and 2 are limiting.
('491 Patent claims 1 and 2)	
"voice signal code"	Plain and ordinary meaning
('193 Patent claims 1 and 7)	
"an input portion to which video signals are inputted"	Plain and ordinary meaning
('901 Patent claim 1)	
"black side"	Plain and ordinary meaning

Term	Agreed Construction
('901 Patent claim 2)	
"video signal[s]"	Plain and ordinary meaning
('901 Patent claims 1 and 2)	
"obtaining an index of communication quality between the terminal and the base stations"	"obtaining an indication of communication quality between the terminal and the base stations"
('139 Patent claims 1 and 11)	
"using said input"	Plain and ordinary meaning
('438 Patent claim 1)	
"an authentication process for allowance to use said display apparatus"	"a process that authorizes the user to use the display apparatus"
('438 Patent claim 1)	
"a predetermined constant period of time"	Plain and ordinary meaning
('443 Patent claim **[**16]** 1)	
"means for selecting an object displayed on said display apparatus"	**Function**: selecting an object displayed on said display apparatus
(Patent claim 3)	**Structure**: Input/output unit 103 and associated software that allows for the claimed selection function. See, e.g., 8:57-9:13, 7:52-8:6, Fig. 2 (106).
"operate to the end"	Plain and ordinary meaning
('794 Patent claims 8 and 14)	
"a receiving means for receiving a plurality of compressed and encoded audio data sequences which are multiplexed"	**Function**: receiving a plurality of compressed and encoded audio data sequences which are multiplexed
('491 Patent claim 9)	**Structure**: An antenna and equivalents
Preambles	The preambles of claims 7-9 are not limiting.
('491 Patent claims 7-9)	
"packetizing audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form for transmission is compressed and encoded and by combining a plurality of the data"
('491 Patent claims 1 and 2)	

Term	Agreed Construction
"a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information which each packet has, and further **[**17]** for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information which said each audio data sequence has"	Plain and ordinary meaning
('491 Patent claims 1, 2, and 9) "a first memory"	Plain and ordinary meaning
('491 Patent claims 1, 2, and 7) "a digital signal processor for decoding the compressed audio data sequences in accordance with said decoding program codes, sequentially"	Plain and ordinary meaning
('491 Patent claims 1, 2, and 9) "a second memory which said digital signal processor and said video decoder use as work area for the decoding processing thereof"	Plain and ordinary meaning
('491 Patent claim 2) "from an outside"	Plain and ordinary meaning
('491 Patent claim 7) "an input device for inputting a destination"	Plain and ordinary meaning
('317 Patent claim 1) "a device for getting a location information of another portable terminal from said another terminal via connected network"	Plain and ordinary meaning
('317 Patent claim 10) "a device for retrieving a route from said present place to said destination"	Plain and ordinary meaning
('317 Patent claim 15) "an image sensing device with a light receiving sensor having an array of pixels arranged **[**18]** vertically and horizontally in a	Plain and ordinary meaning

Term	Agreed Construction
grid pattern, in an N number of vertically arranged pixel lines"	
('493 Patent claim 5) "a display unit with a display screen, that displays an image corresponding to the image signals"	Plain and ordinary meaning
('493 Patent claim 5) "an image-instability detector"	Plain and ordinary meaning
('493 Patent claim 6) "an image-instability of the electric camera"	Plain and ordinary meaning
('493 Patent claim 6) "an encoder/decoder apparatus"	Plain and ordinary meaning
('193 Patent claims 1 and 7) "open-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7) "closed-loop power control"	Plain and ordinary meaning
('193 Patent claims 1 and 7) "bias condition"	"the bias voltage and/or current setting of the amplifier"
('193 Patent claims 1 and 7) "a function defining a relation between bias data and gain data stored in said memory"	"a relationship between bias data and gain data such that each gain data value has a corresponding bias data value"
('193 Patent claim 7) "capacity detector for detecting a remaining capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 1) "controller for controlling operation of said function devices based **[**19]** on said remaining capacity"	Plain and ordinary meaning
('794 Patent claim 1) "a capacity detector detecting a remaining battery capacity of said battery"	Plain and ordinary meaning
('794 Patent claim 9) Preambles	Preambles are limiting

Term	Agreed Construction
('695 Patent, all asserted claims) "packetized audio data sequences which are compressed and encoded and by multiplexing a plurality of those sequences"	"digitized audio data in packet form is compressed and encoded and by combining a plurality of the data"
('695 Patent claims 1 and 4) "a demultiplexer for extracting the one audio data sequence which is designated by the user from said group of packets depending upon a property or attribute information of each packet, and further for extracting a method of compression and encoding which is applied for compressing the audio data sequence from a header information of each audio data sequence"	Plain and ordinary meaning
('695 Patent claims 1 and 4) "a memory"	Plain and ordinary meaning
('695 Patent claims 1 and 4) "begins decoding processing"	Plain and ordinary meaning
('695 Patent claims 1 and 4) "a state display means including a display means and for displaying on said display means that said apparatus is in one of **[**20]** a standby state and an active state in response to said power saving state and said non-power saving state, respectively" ('443 Patent claim 2)	**Function**: displaying on said display means that said apparatus is in one of a standby state and an active state in response to said power saving state and said non-power saving state, respectively **Structure**: State display unit 103 including a display device such as a liquid crystal display (LCD), a flat display panel, a light emitting diode (LED) panel, an electroluminescence (EL) panel, a plasma display panel, a cathode ray tube (CRT), and equivalents, together with a processor (e.g. CPU 501) programmed to display state information on the display

Term	Agreed Construction
	device in accordance with the procedures set forth e.g. in the specification at 4:6-9; 4:49-55; 5:30-37; 7:7-60; 8:64-68; Figs. 2-4 and 11-13 as well as equivalents thereof
"displaying means for displaying at least one of the moving pictures, the still pictures, and the first and second pictures; wherein the displaying means displays a plurality of reproduced ones of the first pictures, and wherein the displaying means displays ones of the moving pictures **[**21]** corresponding to any selected first pictures" ('440 Patent claim 7)	**Function**: displaying at least one of the moving pictures, the still pictures, and the first and second pictures **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:45-47; 13:49-51; 13:54-57; 13:62-63.
"displaying means for displaying at least one of said first still picture, said second still picture and said first picture, wherein said displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture" ('760 Patent claim 13)	**Function**: displaying at least one of said first still picture, said second still picture and said first picture such that the displaying means displays a plurality of reproduced pictures from the reproducing means, and wherein said displaying means displays said first still picture corresponding to a selected picture **Structure**: display medium 130, such as a liquid crystal panel. See, e.g., Figure 6 (130); 13:43-46; 13:47-49; 13:52-55; 13:60-61.
"a relation of said direction and a direction from said present place to said destination" ('317 Patent claims 1 and 10)	Plain and ordinary meaning
"a signal processing unit configured to form image signals" ('729 Patent claim 1)	Plain and ordinary meaning
"characterizing **[**22]** quantities of the communication quality for each of the	"group scores derived from the indication of communication

Term	Agreed Construction
groups"	quality for each base station in a group"
('139 Patent claims 1 and 11)	

Table1 (*Return to related document text*)

Table2 (*Return to related document text*)

"GPS receiver means for receiving GPS-oriented signals and generating received GPS signals"	**Function**: receiving GPS oriented signals and generating received GPS signals
('292 Patent claim 1)	**Structure**: GPS receiver 200 of a mobile handset, the GPS receiver 200 performing block 600 in Figure 2, as disclosed at 3:24-32, 2:53-57, or equivalents thereof
"cellular receiver means for receiving cellular-oriented signals and generating received cellular signals"	**Function**: receiving cellular-oriented signals and generating received cellular signals
('292 Patent claim 1)	**Structure**: cellular receiver 300 of a mobile handset, the cellular receiver performing block 603 in Figure 2, as disclosed at 2:66-3:4, 4:4-9, or equivalents thereof
"GPS position calculation means for calculating the mobile handset's position from the received GPS signals and outputting a GPS-based position result"	**Function**: calculating the mobile handset's position from the received GPS signals and outputting a GPS-based **[**23]** position result
('292 Patent claim 1)	**Structure**: position calculation unit for GPS 201 of a mobile handset, the position calculation unit for GPS 201 performing block 601 in Figure 2 and utilizing synchronization acquisition and reception timing measurements for position determination, as disclosed at 2:54-57, 2:57-60, 3:24-32, 3:33-43, or equivalents thereof
"when any change occurs in the video signal inputted to the input portion" / "when the change of the video signal does not occur and when the illumination detected by the illumination sensor is above a predetermined value"	"in response to any change occurring in the video signal inputted to the input portion" / "in response to the change of the video signal not occurring and the illumination detected by the illumination sensor being above a predetermined value"
('901 Patent claim 1)	
"an input entered by the user"	Plain and ordinary meaning

(Patent claim 1) "a cellular telephone adapted to be used in a CDMA system, comprising"	The preambles are limiting
('193 Patent, all asserted claims)	

Table2 (*Return to related document text*)

Table3 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
"Not indefinite; plain and ordinary meaning"	"Indefinite because the claim term does not inform those skilled in the art about the claim's scope with reasonable certainty"

Table3 (*Return to related document text*)

Table4 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
"a determination based on one or more inputs"	"merging" / "merged"

Table4 (*Return to related document text*)

Table5 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: combining the GPS-based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability **[**38]**	**Function**: combining the GPS based position result and the cellular-based position result with the GPS positioning reliability and the cellular positioning reliability
Structure: GPS/cellular positioning results combining unit 400 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that combines GPS/cellular position as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. *See e.g.*, (4:42-56), (Fig. 3 at 400), (3:12-17), (5:3-7).	**Structure**: GPS / Cellular Positioning Results Combining Unit 400 performing the weighted mean disclosed in Figure 3 and at col. 4:49-56, block 606 in Fig. 2

Table5 (*Return to related document text*)

Table6 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating the mobile handset's position from the received cellular signals and outputting a cellular-based position result **Structure**: A position calculation unit 301 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, or a processor that performs cellular position calculation processes as described in Fig. 2 (block 604) and corresponding recitations in the specification as provided herein, or equivalents thereof. *See e.g.*, (1:23-27), (3:10-11; block 604 in Fig. 2), (4:4-16), (2:66-3:6), (5:3-7).	**Function**: (1) calculating the mobile handset's position from the received cellular signals and (2) outputting a cellular based position result. **Structure**: position calculation unit for cellular 301, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

Table6 (*Return to related document text*)

Table7 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Function: calculating GPS positioning reliability based on the GPS-based position result **Structure**: A GPS reliability calculation unit 204 and/or components within a mobile handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs GPS reliability calculation processes described in Fig. 2 (block 602) and corresponding recitations in the specification as provided herein, or equivalents thereof. *See e.g.*, (2:60-65; block 602 in Fig. 2), (3:38-4:3), (5:3-7).	**Function**: calculating GPS positioning **[**50]** reliability based on the GPS-based position result **Structure**: GPS reliability calculation unit 204, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite

Table7 (*Return to related document text*)

Table8 (*Return to related document text*)

Maxell's Proposed Construction [**58]	Huawei's Proposed Construction
Function: calculating cellular positioning reliability based on the cellular-based position result **Structure**: A cellular reliability calculation unit 304 and/or components within a mobile	**Function**: calculating cellular positioning reliability based on the cellular-based position result **Structure**: cellular

Maxell's Proposed Construction [**58]	Huawei's Proposed Construction
handset that perform processing functions, such as, a CPU programmed to execute processing in accordance with the algorithm set forth in the specification, a processor that performs cellular reliability calculation processes as described in Fig. 2 (block 605) and corresponding recitations in the specification as provided herein, or equivalents thereof. *See e.g.*, (3:10-11; block 605 in Fig. 2), (4:15-42), (3:6-11), (5:3-7).	reliability calculation unit 304, which is insufficient structure because the specification does not disclose the necessary algorithm or flowchart, which renders the term indefinite not disclose the necessary algorithm or flowchart, which renders the term indefinite

Table8 (*Return to related document text*)

Table9 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"still pictures encoded by the first encoding method and by a second encoding method, and second pictures corresponding to the still pictures and having a smaller number of pixels than the still pictures are recorded"

Table9 (*Return to related document text*)

Table10 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"moving picture encoding method"

Table10 (*Return to related document text*)

Table11 (*Return to related document text*)

Maxell's Proposed Construction[3]	Huawei's Proposed Construction
Function: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit and wherein said selection switching determination unit **waits a longer time [**83]** until switching of said physical interface when said movement determination unit determines the moving	**Function**: selecting one from said first and second physical interfaces to switch to a selected physical interface, wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position

[3] Maxell changed its proposed construction post-briefing, acknowledging that the term was a means-plus-function term. Docket No. 115-1 at A-6.

Maxell's Proposed Construction[3]	Huawei's Proposed Construction
speed being faster **Structure**: Physical interface selection unit 104, switching determination unit 108, and/or components within one or more of a mobile communication terminal device, a notebook type personal computer, a portable telephone, a PDA (Personal Digital Assistance), a car navigation that perform processing functions, such as, a processor programmed to execute processing in accordance with the algorithm set forth in the specification in, for example, Figs. 4, 6, 9, and 10 and corresponding recitations in the specification as provided herein, or equivalents thereof. See e.g., (3:33-39),(5:25-50), (5:65-6:44), (7:32-67), (8:52-9:5), (9:28-10:9), and (3:5-10).	detected by said position detection unit and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster **Structure**: Switching determination unit 108 and the algorithms in Figs. 4, 6, and 9, which is insufficient structure because the specification **[**84]** does not disclose the necessary algorithm or flowchart, which renders the term indefinite

Table11 (*Return to related document text*)

Table12 (*Return to related document text*)

Maxell's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	sets a longer period of time to wait before determining whether to switch

Table12 (*Return to related document text*)

Table13 (*Return to related document text*)

Maxell's Proposed Construction	Defendants' Proposed Construction
Function: detecting whether a user-associated medium at least approaches at least part of a housing of said apparatus **Structure**: A sensor, a touch-sensitive surface, or a tablet configured to detect proximity and/or contact using one or more of an electromagnetic induction system, a capacitance system, a capacitive coupling system, a pressure-sensitive resistance system, a transmission pen type ultrasonic system, a surface acoustic wave type ultrasonic	This term is written as a means-plus-function **Function**: for detecting whether a user-associated medium at least approaches at least a part of a housing of said apparatus **Structure**: Electromagnetic induction systems, electrostatic coupling system, and Optical system, listed in Table 1; "microphone" **[**100]** (18:8); "temperature sensor" (19:12); "cameras" (Figs. 14 and 15)

Maxell's Proposed Construction	Defendants' Proposed Construction
system, an optical system, an image sensor, a camera, a microphone, or a temperature sensor, as well as equivalents	

Table13 (*Return to related document text*)

Table14 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
"information to navigate a user who is walking"	"display of information to assist a user in walking, not driving, in a system that is not usable in an object car that is running on a road"

Table14 (*Return to related document text*)

Table15 (*Return to related document text*)

Maxell's Proposed Construction[6]	ZTE's Proposed Construction
Plain and ordinary meaning	Indefinite This is a means-plus-function element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **Function**: outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server **Structure [**112]** : insufficient corresponding structure is disclosed

Table15 (*Return to related document text*)

Table16 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **Function**: "for image sensing"

---

[6] At the oral hearing, Maxell agreed to a means-plus-function interpretation of the term.

Maxell's Proposed Construction	ZTE's Proposed Construction
	Structure: a solid state image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern and having an equal number of color sensitive filter elements arranged such that each color forms a vertical line. See "a solid-state image sensing device with a light receiving sensor having an array of pixels arranged vertically and **[**119]** horizontally in a grid pattern, in an N number of vertically arranged pixel lines" (2:59) See also FIGs 10, 13A, and 13B; [6:17-22]; [15:23-35]

Table16 (*Return to related document text*)

Table17 (*Return to related document text*)

'493 Patent	'729 Patent
an image sensing device with *a light receiving sensor* having an array of pixels arranged vertically and horizontally in a grid pattern	an image sensing device having an array of pixels arranged vertically and horizontally in a grid pattern;

Table17 (*Return to related document text*)

Table18 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
"a device, such as a gyroscopic sensor or the like, capable of detecting an image instability of the electric camera"	Indefinite This is a means-plus-function element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **Function**: "detecting an image-instability of the electric camera" **Structure**: insufficient corresponding structure disclosed

Table18 (*Return to related document text*)

Table19 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
"an amount of instability caused by vertical and/or horizontal movement of the electric camera"	Indefinite

Table19 (*Return to related document text*)

Table20 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
"based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted, in order to correct the image-instability"	"Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-instability"

Table20 (*Return to related document text*)

Table21 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	This is a means-plus-function **[**140]** element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **Function**: "for displaying an image corresponding to the image signals formed by the signal processing unit" **Structure**: "display screen of a television system" (3:22-23) or other screen compatible with NTSC or PAL format (1:35-36; 10:19-21)

Table21 (*Return to related document text*)

Table22 (*Return to related document text*)

'493 Patent	'729 Patent
a display unit with the display screen, to display an image corresponding to the image signals;	"a display unit configured to display an image corresponding to the image signals formed by the signal processing unit."

Table22 (*Return to related document text*)

Table23 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning	"device that includes a first-stage amplifier, two filters, an up-converter, and a second-stage amplifier"

Table23 (*Return to related document text*)

Table24 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
"hardware, software, or a combination of the two that consumes power and implements one or more functions of the information processing device"	Indefinite This is a means-plus-function element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **Function**: "modem functions" (1:20); "audio communication function (function device A) and a videophone function (function device B)" (1:31-32); no function otherwise disclosed **Structure**: insufficient corresponding structure disclosed

Table24 (*Return to related document text*)

Table25 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Function: detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory	**Function**: claim 1: "for detecting change in said method of compression and encoding, and for transferring the decoding program code corresponding to the method of the compression and encoding after being changed, from said read-only memory to said first memory"
Structure: At least one processor **[**165]** — such as a CPU -programmed to execute processing in accordance with the algorithm set forth in flowcharts of Fig. 4 (including steps S3, S5-S9), Fig. 9 (including steps S3-S14) and	claim 2: "for transferring said plural decoding program codes from said read only memory to said second memory in advance, as well as for detecting change in said method of compression and encoding, and for t transferring the decoding program code corresponding to the method of the compression and encoding after being

Maxell's Proposed Construction	ZTE's Proposed Construction
corresponding citations in the specification a 5:60-64, 6:30-7:54, 9:13-18, 9:28-44, and FIGS. 1, 4-6, and 9, as well as equivalents thereof	changed, from said read only memory to said first memory" **Structure**: claims 1 & 2: an external CPU (FIG 1) connected via a bus between a read only memory and the first memory, running the algorithm of Figs. 4 and 5. (6:30-7:54)

Table25 (*Return to related document text*)

Table26 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	Indefinite Alternative if not indefinite: a demultiplexer that outputs one data sequence, which is compressed and encoded, to the input of a frame sync. The demultiplexer itself does this inputting and also extracts the method of compression and encoding

Table26 (*Return to related document text*)

Table27 (*Return to related document text*)

Maxell's Proposed Construction	ZTE's Proposed Construction
Not a means-plus-function term; plain and ordinary meaning	This is a means-plus-function element to be construed in accordance with *35 U.S.C. § 112, ¶ 6*. **[**178]** **Function**: "for receiving a method of compression and encoding from said demultiplexer, for detecting whether said method of compression and encoding changes to another method of compression and encoding or not, and if said method of compression and encoding changes, for downloading the decoding program code corresponding to said another method of compression and encoding to said memory from outside said memory" **Structure**: an external CPU (FIG 1) connected via a bus between a read only

Maxell's Proposed Construction	ZTE's Proposed Construction
	memory and the memory, running the algorithm of Figs. 4 and 5. (6:30-7:54)

Table27 (*Return to related document text*)

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Documents (3)

1. *US Patent Issued to Hitachi on Dec. 25 for "Electric Camera" (Japanese Inventors)*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
News	-None-

2. *US Patent granted to Hitachi, Ltd on December 25 titled as "Electric camera"*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
News	-None-

3. *US Patent granted to Hitachi, Ltd on December 25 titled as "Electric camera"*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
News	-None-

US Patent Issued to Hitachi on Dec. 25 for "Electric Camera" (Japanese Inventors)

US Fed News

January 1, 2013 Tuesday 11:25 PM EST

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Length: 271 words

Dateline: ALEXANDRIA, Va.

Body

ALEXANDRIA, Va., Jan. 1 -- United States Patent no. ***8,339,493***, issued on Dec. 25, was assigned to Hitachi Ltd. (Tokyo).

"Electric Camera" was invented by Takahiro Nakano (Hitachinaka, Japan), Ryuji Nishimura (Yokohama, Japan) and Toshiro Kinugasa (Hiratsuka, Japan). According to the abstract released by the U.S. Patent & Trademark Office: "An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device." The patent was filed on July 28, 2010, under Application No. 12/845,266. For further information please visit:

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=8339493&OS=8339493&RS=8339493 For any query with respect to this article or any other content requirement, please contact Editor at htsyndication@hindustantimes.com

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US Patent granted to Hitachi, Ltd on December 25 titled as "Electric camera"

Plus Patent News

December 27, 2012 Thursday

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Length: 246 words

Dateline: ALEXANDRIA, Va

Body

United States Patent and Trademark Office has granted patent no. ***8,339,493***, on December 25, 2012, to Hitachi, Ltd, titled as "Electric camera"

Inventors: Nakano; Takahiro (Hitachinaka, JP), Nishimura; Ryuji (Yokohama, JP), Kinugasa; Toshiro (Hiratsuka, JP)

Assignee: Hitachi, Ltd. (Tokyo, JP)

According to the abstract released by the U.S. Patent & Trademark Office: "An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device."

The patent was filed on July 28, 2010 Application no. 12/845,266

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US Patent granted to Hitachi, Ltd on December 25 titled as "Electric camera"

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United States Patent and Trademark Office has granted patent no. ***8,339,493*** on December 25, 2012, to Hitachi, Ltd, titled as "Electric camera"

Inventors: Nakano; Takahiro (Hitachinaka, JP), Nishimura; Ryuji (Yokohama, JP), Kinugasa; Toshiro (Hiratsuka, JP)

Assignee: Hitachi, Ltd. (Tokyo, JP)

According to the abstract released by the U.S. Patent & Trademark Office: "An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device."

The patent was filed on July 28, 2010 Application no. 12/845,266

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Document (1)

1. *IPR2016-00236, ZTE Corporation Vs. Maxell, Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
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IPR2018-00236, ZTE Corporation Vs. Maxell, Ltd.

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Date Filed: 11/22/2017
Date Full Case Retrieved: 12/22/2020
Status: Open
Misc: (0) Unknown; Civil

Summary

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Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 2018-06-01
Technical Center Number: 2600
Patent Application Number: 12845266
Patent Number: 8339493

Participants

Litigants	Attorneys
ZTE Corporation **Petitioner** Maxell, Ltd. **PatentOwner**	

Proceedings

Date	#	Proceeding Text	Details
11/22/2017		U.S. Patent No. 5,828,406	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1006

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Date	#	Proceeding Text	Details
			Public? Yes
11/22/2017		Power of Attorney	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public? Yes
11/22/2017		U.S. Patent No. 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
11/22/2017		Declaration of Dr. Barmak Mansoorian	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
11/22/2017		U.S. Patent No. 5,493,335	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
11/22/2017		U.S. Patent No. 5,440,343	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
11/22/2017		U.S. Patent No. 5,497,192	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
11/22/2017		U.S. Patent No. 6,512,541	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
11/22/2017		Prosecution History of U.S. Patent No.	Filed By:

Date	#	Proceeding Text	Details
		8,339,493	petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
11/22/2017		Petition for Inter Parte Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
12/04/2017		Notice of Accord Filing Date	Filed By: board Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
12/12/2017		IPR2018-00236 Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
12/12/2017		IPR2018-00236 Mandatory Notice	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
03/05/2018		2018.03.05 - Patent Owner's Preliminary Response - 493 Patent	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
03/05/2018		Ex. 2002 - Declaration of Jamie Beaber ISO Motions for PHV Admission	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2002 Public? Yes
03/05/2018		2018.03.05 - Patent Owner's Motion for Pro Hac Vice Admission of Jamie Beaber (493)	Filed By: patentowner Document Type: PAPER Paper/Exhibit No:

Date	#	Proceeding Text	Details
			7 Public? Yes
03/05/2018		Ex. 2001 - Claim Construction Order (Huawei-ZTE)	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2001 Public? Yes
03/15/2018		Decision - Granting Motion for Pro Hac Vice Admission - 37 CFR 42.10(c)	Filed By: board Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
06/01/2018		Trial Instituted Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
06/21/2018		Petitioner's Request for Refund of Post-Institution Fees	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes
06/26/2018		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes

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Date and Time: Tuesday, December 22, 2020 4:24:00 PM EST
Job Number: 132758816

Document (1)

1. *IPR2016-00904, Olympus Corporation Vs. Maxell Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2018-00904, Olympus Corporation Vs. Maxell Ltd.

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 12/22/2020

Header

Case Number: IPR2018-00904
Date Filed: 06/20/2018
Date Full Case Retrieved: 12/22/2020
Status: Closed
Misc: (0) Unknown; Civil

Summary

Court Case Status: Terminated
Case Type: IPR: Inter partes review
Technical Center Number: 2600
Patent Application Number: 12845266
Patent Number: 8339493

Participants

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Olympus Corporation **Petitioner** Maxell Ltd. **PatentOwner**	

Proceedings

Date	#	Proceeding Text	Details
06/20/2018		Petitioner's Power of Attorney	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public?

Renee Preston

Date	#	Proceeding Text	Details
			Yes
06/20/2018		Ex. 1001 - US8339493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
06/20/2018		Ex. 1003 - US9100604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
06/20/2018		Ex. 1005 - US5444482 Misawa	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
06/20/2018		Ex. 1008 - US6529236 Watanabe	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
06/20/2018		Ex. 1009 - US5990947 Okino	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1009 Public? Yes
06/20/2018		Ex. 1012 - File History to 12845266 - US 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
06/20/2018		Ex. 1002 - US8059177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
06/20/2018		Ex. 1006 - US6700607 Misawa	Filed By: petitioner

Date	#	Proceeding Text	Details
			Document Type: EXHIBITS Paper/Exhibit No: 1006 Public? Yes
06/20/2018		Ex. 1007 - US6292218 Parulski	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
06/20/2018		Ex. 1010 - US6757013 Matsuzaka	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010 Public? Yes
06/20/2018		Ex. 1011 - JP-H3-1117985-A Egawa_English and Japanese	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1011 Public? Yes
06/20/2018		Ex. 1013 - File History to 10660710 - US 8,059,177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes
06/20/2018		Ex. 1014 - File History to 14264243 - US 9,100,604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
06/20/2018		Ex. 1015 - 5-16-cv-00178 Claim Construction Order	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015 Public? Yes
06/20/2018		Ex. 1016 - Excerpt of File History to 09520836 - US 6,765,616	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1016

Date	#	Proceeding Text	Details
			Public? Yes
06/20/2018		Ex. 1017 - As-filed specification of U.S. Patent Application No. 07997862	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1017 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration1 Appendices A-Z	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Petition for Inter Partes Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration2 Appendices AA-ZZ	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration3 Appendices AAA-MMM	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
07/09/2018		IPR2018-00904 Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
07/09/2018		IPR2018-00904 Mandatory Notices	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
08/09/2018		Notice of Accord Filing Date	Filed By:

Date	#	Proceeding Text	Details
			board Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
11/09/2018		JP 11-355665	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2002 Public? Yes
11/09/2018		U.S. Patent No. 5,828,406	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2001 Public? Yes
11/09/2018		JPO Translation of JP 11-355665	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2003 Public? Yes
11/09/2018		U.S. Patent No. 7,250,969	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2004 Public? Yes
11/09/2018		U.S. Patent No. 6,882,366	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2005 Public? Yes
11/09/2018		Patent Owner's Preliminary Response	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
12/18/2018		Petitioner's Authorized Unopposed Motion to Dismiss Proceeding with Prejudice	Filed By: petitioner Document Type: PAPER Paper/Exhibit No:

Date	#	Proceeding Text	Details
			7 Public? Yes
12/18/2018		Authorized Joint Request to File Agreement as Business Confidential Information Pursuant to 35 U.S.C. 317(b)	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
12/26/2018		Termination Decision Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
01/30/2019		Petitioner's Request for Refund	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes
02/28/2019		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes

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Job Number: 132758959

Document (1)

1. *5:16cv178, Maxell, Ltd. V. Huawei Technologies Co. Ltd. Et Al*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
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Content Type	Narrowed by
Dockets	-None-

5:16cv178, Maxell, Ltd. V. Huawei Technologies Co. Ltd. Et Al

US District Court Docket

US District Court for the Eastern District of Texas

(Texarkana)

This case was retrieved on 12/22/2020

Header

Case Number: 5:16cv178
Date Filed: 11/18/2016
Assigned To: District Judge Robert W. Schroeder, III
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: None
Jurisdiction: Federal Question

Class Code: Closed
Closed: 04/04/2019
Statute: 15:1126
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

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Proceedings

#	Date	Proceeding Text	Source
1	11/18/2016	COMPLAINT against All Defendants (Filing fee $ 400 receipt number 0540-6037766.), filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Civil Cover Sheet Civil Cover Sheet, # 2 Exhibit Exhibit A, # 3 Exhibit Exhibit B, # 4 Exhibit Exhibit C, # 5 Exhibit Exhibit D, # 6 Exhibit Exhibit E, # 7 Exhibit Exhibit F)(Culbertson, Geoffrey) (Entered: 11/18/2016)	
2	11/18/2016	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Culbertson, Geoffrey) (Entered: 11/18/2016)	
3	11/18/2016	CORPORATE DISCLOSURE STATEMENT filed by Hitachi Maxell, Ltd. (Culbertson, Geoffrey) (Entered: 11/18/2016)	
	11/18/2016	Case Assigned to Judge Robert W. Schroeder, III. (mrm,) (Entered: 11/18/2016)	
	11/18/2016	In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice Regarding Consent to Proceed Before Magistrate Judge. (mrm,) (Entered: 11/18/2016)	
4	11/18/2016	CORPORATE DISCLOSURE STATEMENT filed by Hitachi Maxell, Ltd. (Culbertson, Geoffrey) (Entered: 11/18/2016)	
5	11/21/2016	SUMMONS Issued as to Huawei Device USA Inc. (nkl,) (Entered: 11/21/2016)	

#	Date	Proceeding Text	Source
6	11/22/2016	NOTICE of Attorney Appearance by Jamie B Beaber on behalf of Hitachi Maxell, Ltd. (Beaber, Jamie) (Entered: 11/22/2016)	
7	11/22/2016	NOTICE of Attorney Appearance by Amanda Kay Streff on behalf of Hitachi Maxell, Ltd. (Streff, Amanda) (Entered: 11/22/2016)	
8	11/22/2016	NOTICE of Attorney Appearance by Saqib Javaid Siddiqui on behalf of Hitachi Maxell, Ltd. (Siddiqui, Saqib) (Entered: 11/22/2016)	
9	11/22/2016	NOTICE of Attorney Appearance by James A Fussell, III on behalf of Hitachi Maxell, Ltd. (Fussell, James) (Entered: 11/22/2016)	
10	11/22/2016	NOTICE of Attorney Appearance by Tiffany A Miller on behalf of Hitachi Maxell, Ltd. (Miller, Tiffany) (Entered: 11/22/2016)	
11	11/22/2016	NOTICE of Attorney Appearance by Kfir B Levy on behalf of Hitachi Maxell, Ltd. (Levy, Kfir) (Entered: 11/22/2016)	
12	12/01/2016	NOTICE of Attorney Appearance by Alan M Grimaldi on behalf of Hitachi Maxell, Ltd. (Grimaldi, Alan) (Entered: 12/01/2016)	
13	12/01/2016	NOTICE of Attorney Appearance by Baldine Brunel Paul on behalf of Hitachi Maxell, Ltd. (Paul, Baldine) (Entered: 12/01/2016)	
14	12/15/2016	FILED IN ERROR NOTICE by Hitachi Maxell, Ltd. Summons (Culbertson, Geoffrey) Modified on 12/15/2016 (nkl,). (Entered: 12/15/2016)	
	12/15/2016	***FILED IN ERROR - counsel mailed summons to Clerk's office. Document # 14, Notice. PLEASE IGNORE.*** (nkl,) (Entered: 12/15/2016)	
15	12/15/2016	SUMMONS Issued as to Huawei Technologies Co. Ltd.. (nkl,) (Entered: 12/15/2016)	
16	12/19/2016	Defendant's Unopposed First Application for Extension of Time to Answer Complaint re Huawei Device USA Inc. (Shull, KD) (Entered: 12/19/2016)	
	12/19/2016	Defendant's Unopposed First Application for Extension of Time to Answer Complaint is granted pursuant to Local Rule CV-12 for Huawei Device USA Inc to 1/18/2017. 30 Days Granted for Deadline Extension.(nkl.) (Entered: 12/19/2016)	
17	01/18/2017	AMENDED COMPLAINT First Amended Complaint for Patent Infringement against All Defendants, filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F)(Culbertson, Geoffrey) (Entered: 01/18/2017)	
18	01/20/2017	STIPULATION of Dismissal Joint Stipulation of Dismissal by Hitachi Maxell, Ltd.. (Culbertson, Geoffrey) (Additional attachment(s) added on 1/23/2017: # 1 Text of Proposed Order) (sm,). (Entered: 01/20/2017)	
19	01/23/2017	ORDER Granting 18 Stipulation of dismissal and all claims of plaintiff against Defendant Huawei Technologies Co. Ltd are Dismissed Without Prejudice. Huawei Technologies Co. Ltd. now terminated.. Signed by Judge Robert W. Schroeder, III on 1/23/2017. (sm,) (Entered: 01/23/2017)	
20	01/31/2017	Unopposed MOTION for Extension of Time to File Answer re 17 Amended Complaint, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 01/31/2017)	
21	02/02/2017	ORDER granting 20 Motion for Extension of Time to Answer First Amended Complaint through and including March 6, 2017. Signed by Judge Robert W. Schroeder, III on 2/1/2017. (sm,) (Entered: 02/02/2017)	
	02/02/2017	Answer Due Deadline Updated for Huawei Device Co., Ltd. to 3/6/2017; Huawei Device USA Inc to 3/6/2017; Huawei Technologies Co. Ltd. to 3/6/2017. (sm,) (Entered: 02/02/2017)	

#	Date	Proceeding Text	Source
22	03/01/2017	NOTICE of Attorney Appearance by Bryan Christopher Nese on behalf of Hitachi Maxell, Ltd. (Nese, Bryan) (Entered: 03/01/2017)	
23	03/06/2017	ANSWER to 17 Amended Complaint, , COUNTERCLAIM against Hitachi Maxell, Ltd. by Huawei Device USA Inc, Huawei Device Co., Ltd..(Young, Stanley) (Entered: 03/06/2017)	
24	03/06/2017	CORPORATE DISCLOSURE STATEMENT filed by Huawei Device Co., Ltd., Huawei Device USA Inc identifying Corporate Parent Huawei Device USA Inc. for Huawei Device Co., Ltd., Huawei Device Co., Ltd., Huawei Device USA Inc, Huawei Device USA Inc. (Young, Stanley) (Entered: 03/06/2017)	
25	03/06/2017	CORPORATE DISCLOSURE STATEMENT filed by Huawei Device Co., Ltd., Huawei Device USA Inc identifying Corporate Parent Huawei Device Co., Ltd. for Huawei Device Co., Ltd., Huawei Device Co., Ltd., Huawei Device USA Inc, Huawei Device USA Inc. (Young, Stanley) (Entered: 03/06/2017)	
26	03/06/2017	MOTION to Dismiss by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Stanley Young In Support of Defendant's Motion to Dismiss, # 3 Exhibit A to the Declaration of Stanley Young, # 4 Exhibit B to the Declaration of Stanley Young)(Young, Stanley) (Entered: 03/06/2017)	
	03/07/2017	In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice Regarding Consent to Proceed Before Magistrate Judge. (sm,) (Entered: 03/07/2017)	
27	03/08/2017	NOTICE of Readiness for Scheduling Conference by Hitachi Maxell, Ltd. Plaintiff Hitachi Maxell's Notice of Readiness for Scheduling Conference (Culbertson, Geoffrey) (Entered: 03/08/2017)	
28	03/14/2017	NOTICE of Designation of Attorney in Charge to Stanley Young on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Young, Stanley) (Entered: 03/14/2017)	
29	03/21/2017	RESPONSE in Opposition re 26 MOTION to Dismiss filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/21/2017)	
30	03/28/2017	ANSWER to 23 Answer to Amended Complaint, Counterclaim by Hitachi Maxell, Ltd..(Fussell, James) (Entered: 03/28/2017)	
31	03/28/2017	REPLY to Response to Motion re 26 MOTION to Dismiss filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 03/28/2017)	
32	04/04/2017	***VACATED PER ORDER #233***CONSOLIDATION ORDER that the above-styled cases are consolidated for pretrial issues only, with the exception of venue. The earliest filed civil action (5:16-cv-00178) shall serve as the lead case for the consolidated issues. The Clerk of the Court shall add the consolidated defendants to the lead case, as well as lead and local counsel only. It is also hereby ORDERED that, within fourteen (14) days of this Order, the parties shall file in the lead case either (1) a motion for entry of the Docket Control Order, Protective Order, and Discovery Order from Case No. 5:16-cv-179 or (2) a motion for entry of a modified set of documents.. Signed by Judge Robert W. Schroeder, III on 4/4/2017. (sm,) Modified on 3/19/2018 (sm,). (Entered: 04/04/2017)	
33	04/05/2017	SUR-REPLY to Reply to Response to Motion re 26 MOTION to	

#	Date	Proceeding Text	Source
		Dismiss filed by Hitachi Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/05/2017)	
34	04/17/2017	Opposed MOTION to Amend/Correct Docket Control Order by ZTE USA Inc.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Findlay, Eric) (Entered: 04/17/2017)	
35	04/18/2017	Joint MOTION to Amend/Correct the Docket Control Order and Seeking Entry of Discovery Order and Protective Order by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order Docket Control Order, # 2 Text of Proposed Order Discovery Order for Patent Cases, # 3 Text of Proposed Order Patent Protective Order)(Beaber, Jamie) (Entered: 04/18/2017)	
36	04/21/2017	RESPONSE in Opposition re 34 Opposed MOTION to Amend/Correct Docket Control Order filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 DECLARATION OF TIFFANY A. MILLER IN SUPPORT OF PLAINTIFF HITACHI MAXELL, LTD.S RESPONSE IN OPPOSITION TO DEFENDANT ZTE USA INC.S OPPOSED MOTION TO AMEND DOCKET CONTROL ORDER, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F)(Beaber, Jamie) (Entered: 04/21/2017)	
37	04/21/2017	Opposed MOTION for Leave to File SECOND AMENDED COMPLAINT AGAINST HUAWEI DEVICE USA, INC. AND HUAWEI DEVICE CO., LTD. by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit 1 - Proposed Second Amended Complaint, # 3 Exhibit 2 - Proposed Second Amended Complaint (Redline))(Beaber, Jamie) (Entered: 04/21/2017)	
38	04/28/2017	NOTICE of Designation of Mediator, Judge David Folsom (Ret.), filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/28/2017)	
39	04/28/2017	REPLY to Response to Motion re 34 Opposed MOTION to Amend/Correct Docket Control Order filed by ZTE USA Inc.. (Findlay, Eric) (Entered: 04/28/2017)	
40	05/02/2017	ORDER APPOINTING Mediator and Setting Mediation Deadline on or before October 14, 2017. David Folsom added as Mediator. Signed by Judge Robert W. Schroeder, III on 5/2/2017. (sm,) (Entered: 05/02/2017)	
41	05/03/2017	MOTION to Amend/Correct Joint Motion to Substitute Proposed Docket Control Order in Dkt. No. 35 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Proposed Amended Docket Control Order)(Young, Stanley) (Entered: 05/03/2017)	
42	05/05/2017	RESPONSE to Motion re 37 Opposed MOTION for Leave to File SECOND AMENDED COMPLAINT AGAINST HUAWEI DEVICE USA, INC. AND HUAWEI DEVICE CO., LTD. Huawei Defendants' Non-Opposition to Hitachi Maxell, Ltd.'s Motion for Leave to File Its Second Amended Complaint filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/05/2017)	
43	05/05/2017	SUR-REPLY to Reply to Response to Motion re 34 Opposed MOTION to Amend/Correct Docket Control Order filed by Hitachi Maxell, Ltd.. (Beaber, Jamie) (Entered: 05/05/2017)	
44	05/05/2017	DISCOVERY ORDER FOR PATENT CASES. Signed by Judge Robert W. Schroeder, III on 5/5/2017. (sm,) (Entered: 05/05/2017)	
45	05/05/2017	PATENT PROTECTIVE ORDER re 35 Joint MOTION Seeking Entry of Discovery Order and Protective Order filed by Hitachi Maxell, Ltd... Signed by Judge Robert W. Schroeder, III on 5/5/2017. (sm,) (Entered: 05/05/2017)	
46	05/17/2017	NOTICE of Discovery Disclosure by Huawei Device Co., Ltd., Huawei Device USA Inc (Initial and Additional Disclosures)	

#	Date	Proceeding Text	Source
		(Ainsworth, Jennifer) (Entered: 05/17/2017)	
47	05/17/2017	NOTICE of Discovery Disclosure by Hitachi Maxell, Ltd. (Initial and Additional Disclosures) (Culbertson, Geoffrey) (Entered: 05/17/2017)	
48	06/19/2017	NOTICE of Discovery Disclosure by Huawei Device Co., Ltd., Huawei Device USA Inc (Amended Initial and Additional Disclosures) (Ainsworth, Jennifer) (Entered: 06/19/2017)	
49	06/29/2017	***WITHDRAWN PER ORDER #65***SEALED MOTION to Compel Discovery by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O)(Beaber, Jamie) Modified on 8/18/2017 (sm,). (Entered: 06/29/2017)	
50	07/07/2017	NOTICE of Attorney Appearance by Steven Arthur Moore on behalf of ZTE USA Inc., ZTE USA Inc. (Moore, Steven) (Entered: 07/07/2017)	
51	07/07/2017	NOTICE of Attorney Appearance by Callie McCarthy Bjurstrom on behalf of ZTE USA Inc., ZTE USA Inc. (Bjurstrom, Callie) (Entered: 07/07/2017)	
52	07/07/2017	NOTICE of Attorney Appearance by Nicole Sara Cunningham on behalf of ZTE USA Inc., ZTE USA Inc. (Cunningham, Nicole) (Entered: 07/07/2017)	
53	07/07/2017	NOTICE of Attorney Appearance by Matthew Robert Stephens on behalf of ZTE USA Inc., ZTE USA Inc. (Stephens, Matthew) (Entered: 07/07/2017)	
54	07/07/2017	NOTICE of Attorney Appearance by Cheng "Jack" C Ko on behalf of ZTE USA Inc., ZTE USA Inc. (Ko, Cheng "Jack") (Entered: 07/07/2017)	
55	07/11/2017	NOTICE of Discovery Disclosure by Huawei Device Co., Ltd., Huawei Device USA Inc (P.R. 4-1) (Ainsworth, Jennifer) (Entered: 07/11/2017)	
56	07/12/2017	Unopposed MOTION for Extension of Time to File Response/Reply as to 49 SEALED MOTION to Compel Discovery by ZTE USA Inc., ZTE USA Inc.. (Cunningham, Nicole) (Additional attachment(s) added on 7/13/2017: # 1 Text of Proposed Order) (sm,). (Entered: 07/12/2017)	
57	07/12/2017	***FILED IN ERROR, PLEASE IGNORE***Unopposed MOTION for Extension of Time to File Response/Reply as to 56 Unopposed MOTION for Extension of Time to File Response/Reply as to 49 SEALED MOTION to Compel Discovery Text of Proposed Order by ZTE USA Inc., ZTE USA Inc.. (Cunningham, Nicole) Modified on 7/13/2017 (sm,). (Entered: 07/12/2017)	
58	07/14/2017	ORDER granting 56 Motion for Extension of Time to File Response to Plaintiff's Motion to Compel Discovery. (ZTE (USA) Inc. shall be granted an extension of time until July 26, 2016 to respond to Plaintiffs Motion to Compel Discovery.) Signed by Judge Robert W. Schroeder, III on 7/14/2017. (slo,) (Entered: 07/14/2017)	
59	07/22/2017	Unopposed MOTION to Withdraw as Attorney Scott Miller and Sheppard, Mullin, Richter & Hampton as Counsel of Record for ZTE USA Inc. and to Terminate ECF Notifications by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order Granting Unopposed Motion to Withdraw as Counsel)(Miller, Scott) (Entered: 07/22/2017)	
	07/24/2017	***FILED IN ERROR, PER ATTORNEY, DUPLICATION. Document # 57, Motion to extend is terminated (previously filed on 7/12/2017, notice was never entered by clerk. PLEASE	

#	Date	Proceeding Text	Source
		IGNORE.*** (sm,) (Entered: 07/24/2017)	
60	07/24/2017	ORDER Granting 59 Unopposed MOTION to Withdraw as Attorney (Scott Miller and Sheppard, Mullin, Richter & Hampton) for ZTE USA Inc. and to Terminate ECF Notifications filed by ZTE USA Inc.., Attorney Scott R Miller now terminated.. Signed by Judge Robert W. Schroeder, III on 7/24/2017. (sm,) (Entered: 07/24/2017)	
61	07/26/2017	Unopposed MOTION for Extension of Time to File Response/Reply as to 49 SEALED MOTION to Compel Discovery by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 07/26/2017)	
62	07/27/2017	ORDER granting 61 Motion for Extension of Time to File Response/Reply re 49 SEALED MOTION to Compel Discovery Responses due by 8/2/2017. Signed by Judge Robert W. Schroeder, III on 7/27/2017. (sm,) (Entered: 07/27/2017)	
63	08/02/2017	RESPONSE in Opposition re 49 SEALED MOTION to Compel Discovery filed by ZTE USA Inc.. (Attachments: # 1 Exhibit 1)(Cunningham, Nicole) (Entered: 08/02/2017)	
64	08/16/2017	Unopposed MOTION to Withdraw 49 SEALED MOTION to Compel Discovery by Hitachi Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/16/2017)	
65	08/18/2017	ORDER withdrawing 49 Sealed Motion to Compel; granting 64 Motion to Withdraw 49 ORDERING that 49 is WITHDRAWN from the record. Signed by Judge Robert W. Schroeder, III on 8/18/2017. (sm,) (Entered: 08/18/2017)	
66	08/23/2017	NOTICE of Discovery Disclosure by Huawei Device Co., Ltd., Huawei Device USA Inc (P.R. 4-2) (Ainsworth, Jennifer) (Entered: 08/23/2017)	
67	08/23/2017	NOTICE by ZTE USA Inc., ZTE USA Inc. of Compliance Regarding P.R. 4-2 (Cunningham, Nicole) (Entered: 08/23/2017)	
68	08/23/2017	NOTICE by Hitachi Maxell, Ltd. of Compliance Regarding P.R. 4-2 (Beaber, Jamie) (Entered: 08/23/2017)	
69	08/29/2017	JOINT MOTION to Amend/Correct to Substitute Proposed Docket Control Order in Dkt. No. 35 by Hitachi Maxell, Ltd.. (Attachments: # 1 Proposed Amended Docket Control Order)(Beaber, Jamie) (Entered: 08/29/2017)	
70	08/30/2017	DOCKET CONTROL/SCHEDULING ORDER:(Pretrial Conference set for 6/7/2018 10:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III., Joinder of Parties due by 5/5/2017., Jury Selection set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III., Jury Trial set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III., Markman Hearing set for 11/29/2017 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III., Dispositive Motion Hearing set for 5/2/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III., Proposed Pretrial Order due by 5/25/2018.), Motions terminated per this filing: 69 Joint MOTION to Amend/Correct/Substitute Proposed DCO filed by Hitachi Maxell, Ltd., 34 Opposed MOTION to Amend/Correct Docket Control Order filed by ZTE USA Inc., and 41 Joint MOTION to Amend/Correct /Substitute Proposed DCO filed by Huawei Device Co., Ltd., Huawei Device USA Inc.. Signed by Judge Robert W. Schroeder, III on 8/30/2017. (sm,) (Entered: 08/30/2017)	
71	08/30/2017	ORDER granting 37 Motion for Leave to File Second Amended Complaint. Signed by Judge Robert W. Schroeder, III on 8/30/2017. (sm,) (Entered: 08/30/2017)	

#	Date	Proceeding Text	Source
72	08/31/2017	SECOND AMENDED COMPLAINT against Huawei Device USA, Inc. and Huawei Device Co., Ltd filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H)(Culbertson, Geoffrey) Modified on 8/31/2017 (sm,). (Entered: 08/31/2017)	
	08/31/2017	NOTICE FROM CLERK, per attorney, re 72 Amended Complaint. Clerk has Modified this text entry to reflect the complaint is against Huawei Device USA and Huawei Device. (sm,) (Entered: 08/31/2017)	
73	08/31/2017	ORDER Setting Hearing on Motion 26 MOTION to Dismiss : Motion Hearing set for 9/27/2017 10:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III.. Signed by Judge Robert W. Schroeder, III on 8/31/2017. (sm,) (Entered: 08/31/2017)	
74	09/01/2017	Joint Claim Construction and Prehearing Statement by Hitachi Maxell, Ltd., ZTE USA Inc.. (Beaber, Jamie) (Entered: 09/01/2017)	
75	09/07/2017	JOINT NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc Regarding 26 Huawei's Motion to Dismiss (Young, Stanley) (Entered: 09/07/2017)	
76	09/07/2017	Unopposed MOTION to Amend/Correct 70 Scheduling Order, re Privilege Log Service by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Young, Stanley) (sm,). (Entered: 09/07/2017)	
77	09/07/2017	ANSWER to Complaint Second Amended Complaint, COUNTERCLAIM against Hitachi Maxell, Ltd. by Huawei Device USA Inc, Huawei Device Co., Ltd..(Young, Stanley) (Entered: 09/07/2017)	
78	09/08/2017	NOTICE of Discovery Disclosure by Hitachi Maxell, Ltd. (Beaber, Jamie) (Entered: 09/08/2017)	
79	09/13/2017	ORDER granting 76 Motion to Amend/Correct Docket Control Order Re: Privilege Log Service THEREFORE ORDERING deadline to serve privilege logs from September 7, 2017 to September21, 2017 from September 7, 2017 to September 21, 2017 is Granted. Signed by Judge Robert W. Schroeder, III on 9/13/2017. (sm,) (Entered: 09/13/2017)	
80	09/20/2017	Joint MOTION for Leave to File Excess Pages by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 09/20/2017)	
81	09/21/2017	Joint MOTION to Extend the Deadline for Mediation by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 09/21/2017)	
82	09/22/2017	ORDER Granting 81 Joint MOTION to Extend the Deadline for Mediation filed by Hitachi Maxell, Ltd. ORDERING that mediation conference between Hitachi and ZTE USA, Inc shall be held on or before November 15, 2017. Signed by Judge Robert W. Schroeder, III on 9/22/2017. (sm,) (Entered: 09/22/2017)	
83	09/22/2017	ORDER ReSetting Hearing on Motion 26 MOTION to Dismiss : Motion Hearing reset at 2:00 pm for 9/27/2017 in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III.. Signed by Judge Robert W. Schroeder, III on 9/22/2017. (sm,) (Entered: 09/22/2017)	
84	09/22/2017	ANSWER to 77 Answer to Complaint, Counterclaim by Hitachi Maxell, Ltd..(Beaber, Jamie) (Entered: 09/22/2017)	
85	09/25/2017	ORDER granting 80 Motion for Leave to File Excess Pages regarding opening briefs and responsive briefs. Signed by Judge Robert W. Schroeder, III on 9/25/2017. (sm,) (Entered:	

#	Date	Proceeding Text	Source
		09/25/2017)	
86	09/25/2017	Joint MOTION to Extend the Deadline for Mediation by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 09/25/2017)	
87	09/27/2017	Minute Entry for proceedings held before Judge Robert W. Schroeder III: Motion Hearing held on 9/27/2017 re 26 MOTION to Dismiss filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Court Reporter Shea Sloan) (Attachments: # 1 Attorney Sign In Sheet) (bas) (Entered: 09/27/2017)	
88	09/27/2017	PAPER TRANSCRIPT REQUEST by Huawei Device Co., Ltd., Huawei Device USA Inc for proceedings held on 09/27/2017 before Judge Schroeder. (Young, Stanley) (Entered: 09/27/2017)	
89	09/28/2017	ORDER granting 86 Motion to extend the deadline for Mediation to on or before November 15, 2017. Signed by Judge Robert W. Schroeder, III on 9/28/2017. (sm,) (Entered: 09/28/2017)	
90	09/28/2017	PAPER TRANSCRIPT REQUEST by Hitachi Maxell, Ltd. for proceedings held on 9/27/17 before Judge Schroeder. (Beaber, Jamie) (Entered: 09/28/2017)	
91	09/29/2017	NOTICE of Discovery Disclosure by Huawei Device Co., Ltd., Huawei Device USA Inc NOTICE OF COMPLIANCE WITH DOCKET CONTROL ORDER: HUAWEIS PRELIMINARY ELECTION OF ASSERTED PRIOR ART (Young, Stanley) (Entered: 09/29/2017)	
92	09/29/2017	JOINT NOTICE of Submission Regarding Proposed Technical Advisors by Hitachi Maxell, Ltd. re 70 Scheduling Order (Beaber, Jamie) (Entered: 09/29/2017)	
93	10/02/2017	NOTICE of Compliance Regarding Technology Tutorial by Huawei Device Co., Ltd., Huawei Device USA Inc (Ainsworth, Jennifer) (Entered: 10/02/2017)	
94	10/02/2017	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Hearing on Motion to Dismiss held on 9/27/2017 before Judge Robert W. Schroeder III. Court Reporter: Shea Sloan, shea_sloan@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 10/26/2017. Redacted Transcript Deadline set for 11/6/2017. Release of Transcript Restriction set for 1/4/2018. (sms,) (Entered: 10/02/2017)	
95	10/02/2017	Opening CLAIM CONSTRUCTION BRIEF filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5)(Beaber, Jamie) (Entered: 10/02/2017)	
96	10/10/2017	NOTICE by Hitachi Maxell, Ltd. of Objection to ZTE's Technical Tutorial (Beaber, Jamie) (Entered: 10/10/2017)	
97	10/11/2017	ORDER Appointing Rich D. Egan as Technical Advisor in the case.. Signed by Judge Robert W. Schroeder, III on 10/11/2017. (sm,) (Entered: 10/11/2017)	
98	10/13/2017	NOTICE of Attorney Appearance by Michael E Bowlus on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Bowlus, Michael) (Entered: 10/13/2017)	
99	10/23/2017	NOTICE of Attorney Appearance by Hyun Sik Byun on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Byun, Hyun)	

#	Date	Proceeding Text	Source
		(Entered: 10/23/2017)	
100	10/23/2017	RESPONSIVE CLAIM CONSTRUCTION BRIEF filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Affidavit of Dr. Robert Akl, D.Sc, # 2 Affidavit of Dr. Jonathan Wells, Ph.D., M.B.A., # 3 Affidavit of Dr. Andrew Wolfe, Ph.D., # 4 Affidavit of Dr. Barmak Mansoorian, Ph.D., # 5 Affidavit of Dr. Ketan Mayer-Patel, Ph.D., # 6 Affidavit of Mr. Scott Andrews, # 7 Affidavit of Dr. Zhi Ding, Ph.D., # 8 Affidavit of Hyun Byun, # 9 Exhibit 1, # 10 Exhibit 2, # 11 Exhibit 3, # 12 Exhibit 4, # 13 Exhibit 5, # 14 Exhibit 6, # 15 Exhibit 7, # 16 Exhibit 8, # 17 Exhibit 9, # 18 Exhibit 10, # 19 Exhibit 11, # 20 Exhibit 12, # 21 Exhibit 13, # 22 Exhibit 14, # 23 Exhibit 15, # 24 Exhibit 16, # 25 Exhibit 17, # 26 Exhibit 18, # 27 Exhibit 19, # 28 Exhibit 20, # 29 Exhibit 21)(Young, Stanley) Modified on 10/24/2017 (sm,). (Entered: 10/23/2017)	
101	10/24/2017	Unopposed MOTION to Substitute Party Maxell, Ltd. for Hitachi Maxell, Ltd. by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/24/2017)	
102	10/26/2017	ORDER granting 101 Motion to Substitute Party (Plaintiff in 5:16cv179) from Hitachi Maxell, Ltd to Maxell, Ltd.. Signed by District Judge Robert W. Schroeder, III on 10/26/2017. (sm,) (Entered: 10/26/2017)	
103	10/27/2017	NOTICE of Attorney Appearance by Howard Neil Wisnia on behalf of ZTE USA Inc. (Wisnia, Howard) (Entered: 10/27/2017)	
104	10/30/2017	CORPORATE DISCLOSURE STATEMENT filed by Maxell Ltd. identifying Corporate Parent Maxell Holdings, Ltd., Other Affiliate Hitachi, Ltd. for Maxell Ltd.. (Beaber, Jamie) (Entered: 10/30/2017)	
105	10/30/2017	JOINT NOTICE Regarding Estimated Amount of Time Requested for Markman Hearing by Maxell Ltd., ZTE USA Inc. re 70 Scheduling Order, (Beaber, Jamie) (Entered: 10/30/2017)	
106	10/30/2017	REPLY in support of 95 Claim Construction Brief filed by Maxell Ltd.. (Attachments: # 1 Exhibit 06, # 2 Exhibit 07, # 3 Exhibit 08, # 4 Exhibit 09, # 5 Exhibit 10, # 6 Exhibit 11, # 7 Exhibit 12, # 8 Exhibit 13, # 9 Exhibit 14, # 10 Exhibit 15, # 11 Exhibit 16)(Beaber, Jamie) (Entered: 10/30/2017)	
107	10/31/2017	NOTICE of Attorney Appearance by Robert Gary Pluta on behalf of Hitachi Maxell, Ltd., Maxell Ltd. (Pluta, Robert) (Entered: 10/31/2017)	
108	11/03/2017	Joint Claim Construction Chart by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Beaber, Jamie) (Entered: 11/03/2017)	
109	11/10/2017	NOTICE of Attorney Appearance by Anupam Sharma on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Sharma, Anupam) (Entered: 11/10/2017)	
110	11/15/2017	REPORT of Mediation by David Folsom. Mediation result: unsuccessful (Huawei Device USA Inc., Huawei Device Co., Ltd., ZTE USA)(Folsom, David) (Entered: 11/15/2017)	
111	11/22/2017	Unopposed MOTION to Compel DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. ALLEGEDLY SUBJECT TO THIRD-PARTY CONFIDENTIALITY CONSTRAINTS by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/22/2017)	
112	11/22/2017	***WITHDRAWN PER ORDER #174***Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 11/22/2017)	

#	Date	Proceeding Text	Source
113	11/27/2017	MOTION to Compel Discovery from Defendant ZTE USA Inc. Allegedly subject to Third Party Confidentiality Constraints by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/27/2017)	
114	11/27/2017	***WITHDRAWN PER ORDER #173***Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 11/27/2017)	
115	11/28/2017	Amended Claim Construction Chart by Maxell Ltd.. (Attachments: # 1 Amended Exhibit A, # 2 Amended Exhibit B)(Beaber, Jamie) (Entered: 11/28/2017)	
118	11/29/2017	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Markman Hearing held on 11/29/2017. (Court Reporter Kelly Polvi) (Attachments: # 1 Attorney Sign-In Sheet) (SMC) Modified on 12/1/2017 (lfs,). (Entered: 11/30/2017)	
116	11/30/2017	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc of Filing Presentation Slides from the November 29, 2017 Claim Construction Hearing (Attachments: # 1 Exhibit A (part 1), # 2 Exhibit A (part 2), # 3 Exhibit A (part 3))(Ainsworth, Jennifer) (Entered: 11/30/2017)	
117	11/30/2017	NOTICE by Maxell Ltd. of Filing of Presentation Slides from the November 29, 2017 Claim Construction Hearing (Attachments: # 1 Claim Construction Presentation)(Beaber, Jamie) (Entered: 11/30/2017)	
119	11/30/2017	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc of Supplemental Exhibits In Support of Claim Construction Brief re 100 Claim Construction Brief (Attachments: # 1 Affidavit of Hyun Byun (Supplemental), # 2 Exhibit 22, # 3 Exhibit 23)(Byun, Hyun) (Entered: 11/30/2017)	
120	11/30/2017	NOTICE by ZTE USA Inc. of Filing of Presentation Slides from the November 29, 2017 Claim Construction Hearing (Attachments: # 1 Exhibit Claim Construction Presentation)(Cunningham, Nicole) (Entered: 11/30/2017)	
121	12/01/2017	PAPER TRANSCRIPT REQUEST by Huawei Device Co., Ltd., Huawei Device USA Inc for proceedings held on 11/29/2017 - Claim Construction Hearing before Judge Schroeder. (Ainsworth, Jennifer) (Entered: 12/01/2017)	
122	12/04/2017	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on 11/29/2017 Markman Hearing before Judge Schroeder. (Beaber, Jamie) (Entered: 12/04/2017)	
123	12/04/2017	NOTICE of Attorney Appearance by Gregory Scott Nieberg on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Nieberg, Gregory) (Entered: 12/04/2017)	
124	12/06/2017	SEALED MOTION FOR ALTERNATIVE SERVICE OF PROCESS by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 12/06/2017)	
125	12/06/2017	SEALED RESPONSE to Motion re 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A - Declaration of Hyun Byun, # 2 Exhibit B - Declaration of Shuhui Wang, # 3 Text of Proposed Order)(Young, Stanley) (Entered: 12/06/2017)	
126	12/08/2017	REDACTION to 125 Sealed Response to Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Young, Stanley) (Entered: 12/08/2017)	
127	12/11/2017	NOTICE of Attorney Appearance by William Justin Barrow on	

#	Date	Proceeding Text	Source
		behalf of Maxell Ltd. (Barrow, William) (Entered: 12/11/2017)	
128	12/11/2017	NOTICE of Attorney Appearance - Pro Hac Vice by Michael T. Lindinger on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-6583685. (Lindinger, Michael) (Entered: 12/11/2017)	
129	12/11/2017		
130	12/11/2017	NOTICE of Attorney Appearance - Pro Hac Vice by Justin Park on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-6583849. (Park, Justin) (Entered: 12/11/2017)	
131	12/11/2017	NOTICE of Attorney Appearance - Pro Hac Vice by Alison T Gelsleichter on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-6583893. (Gelsleichter, Alison) (Entered: 12/11/2017)	
132	12/11/2017	NOTICE of Attorney Appearance by Thomas Edward Garten on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Garten, Thomas) (Entered: 12/11/2017)	
133	12/11/2017	***DEFICIENT DOCUMENT, PLEASE IGNORE***SEALED PATENT DOCUMENT. (Attachments: # 1 Affidavit, # 2 Text of Proposed Order)(Cunningham, Nicole) Modified on 12/12/2017 (sm,). (Entered: 12/11/2017)	
134	12/11/2017	RESPONSE in Opposition re 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA filed by ZTE USA Inc.. (Attachments: # 1 Appendix of Cunningham, # 2 Exhibit 1, # 3 Text of Proposed Order)(Cunningham, Nicole) (Entered: 12/11/2017)	
	12/12/2017	NOTICE of DEFICIENCY regarding the #133 Sealed Document submitted by ZTE USA Inc.. No certificate of authority to seal statement was included and the wrong event was used to file. Correction should be made by 1 business day and refiled. (sm,) (Entered: 12/12/2017)	
135	12/12/2017	SEALED PATENT RESPONSE to 113 MOTION to Compel Discovery from Defendant ZTE USA Inc. filed by ZTE USA Inc.. (Attachments: # 1 Affidavit of Cunningham, # 2 Text of Proposed Order)(Cunningham, Nicole) (Entered: 12/12/2017)	
136	12/15/2017	***WITHDRAWN PER ORDER #174***Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd. by Maxell Ltd.. (Attachments: # 1 Proposed Reply, # 2 Declaration in Support of Proposed Reply, # 3 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 12/15/2017)	
137	12/15/2017	***WITHDRAWN PER ORDER #173***Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendant ZTE USA Inc. by Maxell Ltd.. (Attachments: # 1 Proposed Reply, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 12/15/2017)	
138	12/18/2017	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Markman Hearing Proceedings held on 11/29/17 before Judge Schroeder. Court Reporter/Transcriber: Kelly Polvi, Telephone number: 503/779-7406. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due	

#	Date	Proceeding Text	Source
		1/11/2018. Redacted Transcript Deadline set for 1/22/2018. Release of Transcript Restriction set for 3/22/2018. (dlc,) (Entered: 12/18/2017)	
139	12/18/2017	NOTICE of Attorney Appearance - Pro Hac Vice by Derek Andros on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc. Filing fee $ 100, receipt number 0540-6592902. (Andros, Derek) (Entered: 12/18/2017)	
140	12/19/2017	ORDER that a single payment be made promptly to Technical Advisor Rich Egan. Signed by District Judge Robert W. Schroeder, III on 12/19/2017. (sm,) (Entered: 12/19/2017)	
141	12/19/2017	NOTICE of Attorney Appearance - Pro Hac Vice by Clark S Bakewell on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-6595243. (Bakewell, Clark) (Entered: 12/19/2017)	
142	12/19/2017	NOTICE of Attorney Appearance by Timothy John Rawson on behalf of ZTE USA Inc. (Rawson, Timothy) (Entered: 12/19/2017)	
143	12/19/2017	***WITHDRAWN PER ORDER #174***SEALED RESPONSE to Motion re 136 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd. AND ALTERNATIVE MOTION FOR LEAVE TO FILE A SUR-REPLY IN SUPPORT OF HUAWEIS OPPOSITION TO MAXELL, LTD.S OPPOSED MOTION TO COMPEL DISCOVERY filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A - Declaration of Derek J. Andros, # 2 Exhibit B - Declaratoin of Shuhui Wang, # 3 Sur-Reply, # 4 Text of Proposed Order)(Byun, Hyun) Modified on 1/31/2018 (sm,). (Entered: 12/19/2017)	
144	12/20/2017	SEALED RESPONSE to Motion re 137 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendant ZTE USA Inc. filed by ZTE USA Inc.. (Attachments: # 1 Affidavit Nicole S. Cunningham, # 2 Exhibit A, # 3 Text of Proposed Order)(Cunningham, Nicole) (Entered: 12/20/2017)	
145	12/21/2017	SEALED RESPONSE to Motion re 124 SEALED MOTION FOR ALTERNATIVE SERVICE OF PROCESS filed by ZTE USA Inc.. (Attachments: # 1 Affidavit Nicole S. Cunningham, # 2 Affidavit James Ray Wood, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Text of Proposed Order)(Cunningham, Nicole) (Entered: 12/21/2017)	
146	12/27/2017	REPLY to Response to Motion re 124 SEALED MOTION FOR ALTERNATIVE SERVICE OF PROCESS filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 12/27/2017)	
147	01/04/2018	ORDER granting 111 Motion to Compel and ORDERED that without awaiting third party consent Huawei shall produce all relevant documents. Signed by District Judge Robert W. Schroeder, III on 1/4/2018. (sm,) (Entered: 01/04/2018)	
148	01/04/2018	Agreed MOTION to Amend/Correct 70 Scheduling Order, Terminate Motions,,,,,,,, by Maxell Ltd.. (Attachments: # 1 Proposed Amended Docket Control Order)(Beaber, Jamie) (Entered: 01/04/2018)	
149	01/05/2018	NOTICE of Attorney Appearance by Sara Jean O'Connell on behalf of ZTE USA Inc. (O'Connell, Sara) (Entered: 01/05/2018)	
150	01/05/2018	NOTICE by Maxell Ltd. of Disclosure of Amended Final Election of Asserted Claims (Beaber, Jamie) (Entered: 01/05/2018)	
151	01/05/2018	Opposed MOTION for Leave to File /Supplement Invalidity Contentions by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order, # 2 Affidavit of Stanely Young, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit	

#	Date	Proceeding Text	Source
		9. # 12 Exhibit 10)(Young, Stanley) (Entered: 01/05/2018)	
152	01/05/2018	***WITHDRAWN PER ORDER #174***Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendants Huawei Device USA INC. and Huawei Device Co., LTD. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 01/05/2018)	
153	01/05/2018	***WITHDRAWN PER ORDER #173***Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendant ZTE USA INC. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 1/31/2018 (sm,). (Entered: 01/05/2018)	
154	01/08/2018	AMENDED DOCKET CONTROL/SCHEDULING ORDER:(Pretrial Conference set for 6/7/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Selection set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Proposed Pretrial Order due by 5/25/2018.) re 148 Agreed MOTION to Amend/Correct 70 Scheduling Order, filed by Maxell Ltd... Signed by District Judge Robert W. Schroeder, III on 1/8/2018. (sm,) (Entered: 01/08/2018)	
155	01/09/2018	REDACTION to 152 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendants Huawei Device USA INC. and Huawei Device Co., LTD. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/09/2018)	
156	01/09/2018	REDACTION to 153 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendant ZTE USA INC. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/09/2018)	
157	01/11/2018	FILED IN ERROR. PLEASE IGNORE. NOTICE by Maxell Ltd. re 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA, 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. Notice of Request of Hearing on Maxell's Motion to Compel (Culbertson, Geoffrey) Modified on 1/11/2018 (slo,). (Entered: 01/11/2018)	
	01/11/2018	***FILED IN ERROR. Document # 157, Notice. WRONG EVENT USED. ATTORNEY MUST REFILE. PLEASE IGNORE.*** (slo,) (Entered: 01/11/2018)	
158	01/11/2018	Unopposed MOTION Hearing on Motions to Compel Discovery re 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA, 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order Order on Unopposed Motion for Hearing On Motions to Compel)(Culbertson, Geoffrey) (Entered: 01/11/2018)	
159	01/12/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc re 151 Opposed MOTION for Leave to File /Supplement Invalidity Contentions (Ainsworth, Jennifer) (Entered: 01/12/2018)	
160	01/17/2018	ORDER Granting 158 Unopposed MOTION for Hearing on Motions and Setting Hearing on Motions 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. and 114 SEALED MOTION to Compel Discovery from Defendant ZTE USA ;(Motion Hearing set for 1/22/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.), [.	

#	Date	Proceeding Text	Source
		Signed by District Judge Robert W. Schroeder, III on 1/17/2018. (sm,) (Entered: 01/17/2018)	
161	01/18/2018	NOTICE of Designation of Steven A. Moore as Lead Counsel for ZTE USA, Inc. (O'Connell, Sara) Modified on 1/18/2018 (sm,). (Entered: 01/18/2018)	
162	01/18/2018	***WITHDRAWN PER #183 ORDER***SEALED RESPONSE to Motion re 152 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendants Huawei Device USA INC. and Huawei Device Co., LTD. filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit A - Response to Proposed Supplement, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H)(Young, Stanley) Modified on 2/8/2018 (sm,). (Entered: 01/18/2018)	
163	01/19/2018	NOTICE by Maxell Ltd., ZTE USA Inc. re 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA (Joint Report and Notice of Resolution Regarding Maxell's Motion to Compel) (Beaber, Jamie) (Entered: 01/19/2018)	
164	01/21/2018	NOTICE by Maxell Ltd. re 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. (Joint Report Regarding Maxell's Motion to Compel) (Beaber, Jamie) (Entered: 01/21/2018)	
165	01/22/2018	Minute Entry for in chambers conference held before District Judge Robert W. Schroeder III. (Attachments: # 1 Attorney Sign In Sheet) (bas) (Entered: 01/22/2018)	
166	01/22/2018	RESPONSE in Opposition re 151 Opposed MOTION for Leave to File /Supplement Invalidity Contentions filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/22/2018)	
167	01/24/2018	Joint MOTION to Withdraw 137 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendant ZTE USA Inc., 153 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendant ZTE USA INC., 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/24/2018)	
168	01/24/2018	Unopposed MOTION for Leave to Serve Supplemental Infringement Contentions on ZTE USA Inc. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/24/2018)	
169	01/25/2018	Joint MOTION to Withdraw 136 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd., 152 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendants Huawei Device USA INC. and Huawei Device Co., LTD., 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD., 143 Sealed Response to Motion,, (Joint Stipulation and Motion to Withdraw Pending Discovery Motions, Docket Nos. 112, 136, 143, and 152) by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 01/25/2018)	
170	01/29/2018	NOTICE by Maxell Ltd. re 29 Response in Opposition to Motion, 26 MOTION to Dismiss of Supplemental Authority (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 01/29/2018)	
171	01/29/2018	REPLY to Response to Motion re 151 Opposed MOTION for	

#	Date	Proceeding Text	Source
		Leave to File /Supplement Invalidity Contentions filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Sharma, Anupam) (Entered: 01/29/2018)	
172	01/31/2018	ORDER granting 168 Motion for Leave to Serve Supplemental Infringement Contentions on ZTE USA Inc.. Signed by District Judge Robert W. Schroeder, III on 01/31/18. (sm,) (Entered: 01/31/2018)	
173	01/31/2018	ORDER granting 167 Motion to Withdraw 137 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendant ZTE USA Inc., 153 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendant ZTE USA INC., 114 Opposed SEALED MOTION to Compel Discovery from Defendant ZTE USA. Signed by District Judge Robert W. Schroeder, III on 01/31/2018. (sm,) (Entered: 01/31/2018)	
174	01/31/2018	ORDER granting 169 Motion to Withdraw 136 Opposed SEALED MOTION for Leave to File Reply in Support of Motion to Compel Discovery from Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd., 152 Opposed SEALED MOTION for leave to file a supplement to its motion to compel discovery from defendants Huawei Device USA INC. and Huawei Device Co., LTD., 112 Opposed SEALED MOTION TO COMPEL DISCOVERY FROM DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD., 143 Sealed Response to Motion,,. Signed by District Judge Robert W. Schroeder, III on 01/31/18. (sm,) (Entered: 01/31/2018)	
175	01/31/2018	CLAIM CONSTRUCTION ORDER. Signed by District Judge Robert W. Schroeder, III on 1/31/2018. (sm,) (Entered: 01/31/2018)	
176	02/02/2018	Unopposed MOTION to Amend/Correct 154 Scheduling Order,,, Terminate Motions,, Regarding Rebuttal Expert Reports by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Sharma, Anupam) (Entered: 02/02/2018)	
177	02/02/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc of Disclosure of Final Election of Asserted Prior Art (Sharma, Anupam) (Entered: 02/02/2018)	
178	02/02/2018	NOTICE by ZTE USA Inc. of Disclosure of Final Election of Asserted Prior Art (Moore, Steven) (Entered: 02/02/2018)	
179	02/05/2018	ORDER granting 176 Motion to Amend/Correct Docket Control Order regarding Rebuttal Expert Reports. Signed by District Judge Robert W. Schroeder, III on 2/5/2018. (sm,) (Entered: 02/05/2018)	
180	02/06/2018	SUR-REPLY to Reply to Response to Motion re 151 Opposed MOTION for Leave to File /Supplement Invalidity Contentions filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 02/06/2018)	
181	02/06/2018	Unopposed MOTION to Withdraw 162 Sealed Response to Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Young, Stanley) (Entered: 02/06/2018)	
182	02/07/2018	Opposed SEALED MOTION to Strike Portions of Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s Opening Expert Reports Based on Undisclosed Invalidity Contentions by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 02/07/2018)	
183	02/08/2018	ORDER granting 181 Motion to Withdraw 162 Sealed Response to Motion. Signed by District Judge Robert W. Schroeder, III on 2/8/2018. (sm,) (Entered: 02/08/2018)	

#	Date	Proceeding Text	Source
184	02/08/2018	MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. by Maxell Ltd.. (Attachments: # 1 Declaration of James A. Fussell, III, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Text of Proposed Order)(Beaber, Jamie) (Entered: 02/08/2018)	
185	02/09/2018	Opposed MOTION to Strike Portions of Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s Opening Expert Reports Based on Undisclosed Invalidity Contentions (REDACTED - PUBLIC VERSION OF DKT. 182) by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Beaber, Jamie) (Entered: 02/09/2018)	
186	02/09/2018	RESPONSE to 170 Notice (Other) Plaintiff's Notice of Supplemental Authority filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 02/09/2018)	
187	02/16/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc of Certification of Document Production (Young, Stanley) (Entered: 02/16/2018)	
188	02/21/2018	RESPONSE in Opposition re 182 Opposed SEALED MOTION to Strike Portions of Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s Opening Expert Reports Based on Undisclosed Invalidity Contentions filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Affidavit of Anupam Sharma, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F)(Sharma, Anupam) (Entered: 02/21/2018)	
189	02/22/2018	Unopposed MOTION for Extension of Time to File Response/Reply as to 184 MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Cunningham, Nicole) (Entered: 02/22/2018)	
190	02/23/2018	Joint MOTION to Suspend All Deadlines in Docket Control Order as to Huawei Only by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 02/23/2018)	
191	02/23/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc of Certification of Source Code Production (Young, Stanley) (Entered: 02/23/2018)	
192	02/26/2018	ORDER granting 189 Motion for Extension of Time to File Response/Reply to Motion to Strike until and including February 26, 2018. Signed by District Judge Robert W. Schroeder, III on 2/26/2018. (sm,) (Entered: 02/26/2018)	
193	02/27/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 184 MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. filed by ZTE USA Inc.. (Attachments: # 1 Affidavit, # 2 Text of Proposed Order)(Cunningham, Nicole) (Entered: 02/27/2018)	
194	02/27/2018	SEALED PATENT MOTION Memo of Points and Authorities In Support of Motion to Amend Invalidity Contentions by ZTE USA Inc.. (Attachments: # 1 Exhibit A, # 2 Affidavit, # 3 Text of Proposed Order)(Cunningham, Nicole) (Entered: 02/27/2018)	
195	02/28/2018	REPLY to Response to Motion re 182 Opposed SEALED MOTION to Strike Portions of Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s Opening Expert Reports Based on Undisclosed Invalidity Contentions filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 02/28/2018)	
196	03/02/2018	SEALED PATENT MOTION [Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794] by ZTE USA Inc.. (Attachments: # 1 Affidavit Matthew Stephens, # 2	

#	Date	Proceeding Text	Source
		Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D)(Cunningham, Nicole) (Additional attachment(s) added on 3/5/2018: # 6 Text of Proposed Order) (lfs,). (Entered: 03/02/2018)	
197	03/02/2018	SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E)(Beaber, Jamie) (Entered: 03/02/2018)	
198	03/02/2018	SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Clark Bakewell, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H)(Beaber, Jamie) (Entered: 03/02/2018)	
199	03/02/2018	SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 1-7 of U.S. Patent No. 6,408,193 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) (Entered: 03/02/2018)	
200	03/02/2018	MOTION First Daubert Motion to Exclude Mr. Scott Andrews' Untimely Opinions on Indefiniteness and Unreliable Opinions on Obviousness of U.S. Patent No. 6,748,317 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Michael Lindinger, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) (Entered: 03/02/2018)	
201	03/02/2018	MOTION Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and 8,736,729 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A)(Beaber, Jamie) (Entered: 03/02/2018)	
202	03/02/2018	SEALED PATENT MOTION Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) (Entered: 03/02/2018)	
203	03/02/2018	SEALED PATENT MOTION Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Tyler Earnest, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D)(Beaber, Jamie) (Entered: 03/02/2018)	
204	03/02/2018	SEALED PATENT MOTION [Motion for Summary Judgment of Invalidity of U.S. Patent No. 5,396,443] by ZTE USA Inc.. (Attachments: # 1 Affidavit Tim Rawson, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit R, # 6 Exhibit V, # 7 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/02/2018)	
205	03/02/2018	SEALED PATENT MOTION [Motion for Summary Judgment Re Non-Infringement Under Doctrine of Equivalents] by ZTE USA Inc.. (Attachments: # 1 Affidavit Christine Ko, # 2 Exhibit B, # 3 Exhibit F, # 4 Exhibit Q, # 5 Exhibit X, # 6 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/02/2018)	
206	03/02/2018	SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317] by ZTE USA Inc.. (Attachments: # 1 Affidavit Tim Rawson, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/02/2018)	

#	Date	Proceeding Text	Source
207	03/02/2018	SEALED PATENT MOTION Daubert Motion to Exclude Portions of Expert Opinion Testimony by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Text of Proposed Order)(Moore, Steven) (Entered: 03/02/2018)	
208	03/02/2018	SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement U.S. Patent No. 6,408,193] by ZTE USA Inc.. (Attachments: # 1 Affidavit Nicole S. Cunningham, # 2 Exhibit F, # 3 Exhibit I, # 4 Exhibit L, # 5 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/03/2018)	
209	03/03/2018	SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,816,491 and 8,098,695] by ZTE USA Inc.. (Attachments: # 1 Affidavit Nicole S. Cunningham, # 2 Exhibit A, # 3 Exhibit Q, # 4 Exhibit U, # 5 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/03/2018)	
210	03/06/2018	***FILED IN ERROR, PLEASE IGNORE***MOTION for Partial Summary Judgment of No Invalidity of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (REDACTED - PUBLIC VERSION OF DKT.197) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E)(Beaber, Jamie) Modified on 3/7/2018 (sm,). (Entered: 03/06/2018)	
211	03/06/2018	***FILED IN ERROR, PLEASE IGNORE***MOTION for Partial Summary Judgment of No Invalidity of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 (REDACTED - PUBLIC VERSION OF DKT. 198) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Clark Bakewell, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H)(Beaber, Jamie) Modified on 3/7/2018 (sm,). (Entered: 03/06/2018)	
212	03/06/2018	***FILED IN ERROR, PLEASE IGNORE***MOTION for Partial Summary Judgment of No Invalidity of Claims 1-7 of U.S. Patent No. 6,408,193 (REDACTED - PUBLIC VERSION OF DKT.199) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) Modified on 3/7/2018 (sm,). (Entered: 03/06/2018)	
213	03/06/2018	***FILED IN ERROR, PLEASE IGNORE***MOTION Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193 (REDACTED - PUBLIC VERSION OF DKT.202) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) Modified on 3/7/2018 (sm,). (Entered: 03/06/2018)	
214	03/06/2018	***FILED IN ERROR, PLEASE IGNORE***MOTION Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 (REDACTED - PUBLIC VERSION OF DKT. 203) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Tyler Earnest, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D)(Beaber, Jamie) Modified on 3/7/2018 (sm,). (Entered: 03/06/2018)	
215	03/06/2018	REPLY to Response to Motion re 184 MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 03/06/2018)	
	03/07/2018	***FILED IN ERROR, WRONG EVENT USED, ATTORNEY	

#	Date	Proceeding Text	Source
		MUST REFILE. Documents # 210-214, Motions are now Terminated. PLEASE IGNORE.*** (sm,) (Entered: 03/07/2018)	
216	03/07/2018	REDACTION to 197 SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E)(Beaber, Jamie) (Entered: 03/07/2018)	
217	03/07/2018	REDACTION to 198 SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Clark Bakewell, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H)(Beaber, Jamie) (Entered: 03/07/2018)	
218	03/07/2018	REDACTION to 199 SEALED PATENT MOTION Motion for Partial Summary Judgment of No Invalidity of Claims 1-7 of U.S. Patent No. 6,408,193 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) (Entered: 03/07/2018)	
219	03/07/2018	REDACTION to 202 SEALED PATENT MOTION Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(Beaber, Jamie) (Entered: 03/07/2018)	
220	03/07/2018	REDACTION to 203 SEALED PATENT MOTION Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Tyler Earnest, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D)(Beaber, Jamie) (Entered: 03/07/2018)	
221	03/07/2018	SUR-REPLY to Reply to Response to Motion re 182 Opposed SEALED MOTION to Strike Portions of Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd.'s Opening Expert Reports Based on Undisclosed Invalidity Contentions filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Sharma, Anupam) (Entered: 03/07/2018)	
222	03/09/2018	Agreed MOTION to Amend/Correct 154 Scheduling Order,,, Terminate Motions,, by Maxell Ltd.. (Attachments: # 1 Proposed Amended Docket Control Order)(Beaber, Jamie) (Entered: 03/09/2018)	
223	03/09/2018	REDACTION to 204 SEALED PATENT MOTION [Motion for Summary Judgment of Invalidity of U.S. Patent No. 5,396,443] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Tim Rawson, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit R, # 6 Exhibit V, # 7 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/09/2018)	
224	03/09/2018	REDACTION to 205 SEALED PATENT MOTION [Motion for Summary Judgment Re Non-Infringement Under Doctrine of Equivalents] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Christine Ko, # 2 Exhibit B, # 3 Exhibit F, # 4 Exhibit Q, # 5 Exhibit X, # 6 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/09/2018)	
225	03/09/2018	REDACTION to 206 SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos.	

#	Date	Proceeding Text	Source
		5,396,443 and 6,748,317] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Tim Rawson, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/09/2018)	
226	03/09/2018	REDACTION to 208 SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement U.S. Patent No. 6,408,193] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Nicole Cunningham, # 2 Exhibit F, # 3 Exhibit I, # 4 Exhibit L, # 5 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/09/2018)	
227	03/09/2018	REDACTION to 209 SEALED PATENT MOTION [Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,816,491 and 8,098,695] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Nicole Cunningham, # 2 Exhibit A, # 3 Exhibit Q, # 4 Exhibit U, # 5 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/09/2018)	
228	03/09/2018	REDACTION to 196 SEALED PATENT MOTION [Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794] by ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Affidavit of Matthew Stephens, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D)(Cunningham, Nicole) (Additional attachment(s) added on 3/12/2018: # 6 Text of Proposed Order) (lfs,). (Entered: 03/09/2018)	
229	03/13/2018	SUR-REPLY to Reply to Response to Motion re 184 MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. ZTE (USA), Inc. Surreply in Opposition to Plaintiff's Motion to Strike Expert Reports filed by ZTE USA Inc.. (Cunningham, Nicole) (Entered: 03/13/2018)	
230	03/13/2018	RESPONSE in Opposition re 194 SEALED PATENT MOTION Memo of Points and Authorities In Support of Motion to Amend Invalidity Contentions filed by Maxell Ltd.. (Attachments: # 1 Declaration of James A. Fussell, III, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/13/2018)	
231	03/14/2018	**WITHDRAWN PER ORDER #411** SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Additional attachment(s) added on 3/15/2018: # 5 Revised Order (no lines)) (sm,). Modified on 5/31/2018 (slo,). (Entered: 03/14/2018)	
232	03/16/2018	REDACTION to 231 SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/16/2018)	
233	03/19/2018	ORDER VACATING 32 Consolidation Order. The Clerk is directed to file the Claim Construction Order (Docket No. 175) in Case No. 5:16-cv-179. All other filings in Case No. 5:16-cv-178 relating to ZTE Corporation and/or ZTE USA Inc. are incorporated by reference into Case No. 5:16-cv-179. Signed by District Judge Robert W. Schroeder, III on 3/19/2018. (sm,) (Entered: 03/19/2018)	
234	03/19/2018	AMENDED DOCKET CONTROL/SCHEDULING ORDER: Pretrial Conference reset for 6/7/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Jury Selection reset for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District	

#	Date	Proceeding Text	Source
		Judge Robert W. Schroeder III. Jury Trial reset for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Dispositive Motion Hearing set for 5/30/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Proposed Pretrial Order due by 5/25/2018.. Signed by District Judge Robert W. Schroeder, III on 3/19/2018. (sm,) (Entered: 03/19/2018)	
235	03/19/2018	***FILED IN ERROR, PLEASE IGNORE***RESPONSE in Opposition re 201 MOTION Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and 8,736,729 filed by ZTE USA Inc.. (Cunningham, Nicole) Modified on 3/20/2018 (sm,). (Entered: 03/19/2018)	
236	03/19/2018	***FILED IN ERROR, PLEASE IGNORE***RESPONSE in Opposition re 200 MOTION First Daubert Motion to Exclude Mr. Scott Andrews' Untimely Opinions on Indefiniteness and Unreliable Opinions on Obviousness of U.S. Patent No. 6,748,317 filed by ZTE USA Inc.. (Attachments: # 1 Exhibit A)(Cunningham, Nicole) Modified on 3/20/2018 (sm,). (Entered: 03/19/2018)	
237	03/19/2018	***FILED IN ERROR, PLEASE IGNORE***SEALED PATENT RESPONSE to SEALED PATENT MOTION re 203 SEALED PATENT MOTION Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 filed by ZTE USA Inc.. (Attachments: # 1 Declaration of Nicole S. Cunningham, # 2 Exhibit A)(Cunningham, Nicole) Modified on 3/20/2018 (sm,). (Entered: 03/19/2018)	
238	03/19/2018	***FILED IN ERROR, PLEASE IGNORE***SEALED PATENT RESPONSE to SEALED PATENT MOTION re 202 SEALED PATENT MOTION Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193 filed by ZTE USA Inc.. (Cunningham, Nicole) Modified on 3/20/2018 (sm,). (Entered: 03/19/2018)	
	03/20/2018	***FILED IN ERROR, FILED IN WRONG CASE, TO BE FILED IN 5:16cv179. Documents # 235-238 (Sealed and Unsealed Responses). PLEASE IGNORE.*** (sm,) (Entered: 03/20/2018)	
239	03/28/2018	NOTICE of Attorney Appearance by Robert Thomas Haslam, III on behalf of Huawei Device Co., Ltd., Huawei Device USA Inc (Haslam, Robert) (Entered: 03/28/2018)	
240	03/29/2018	ORDER denying 26 Motion to Dismiss. Signed by District Judge Robert W. Schroeder, III on 3/29/2018. (sm,) (Entered: 03/29/2018)	
241	03/29/2018	MOTION for Leave to File Exceed Page Limits on Huawei's Response to Plaintiff's Motion for Sanctions by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 03/29/2018)	
242	03/29/2018	Unopposed MOTION to Withdraw as Counsel for Defendants ZTE Corporation and ZTE USA Inc. by ZTE Corporation, ZTE USA Inc., ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Rawson, Timothy) (Entered: 03/29/2018)	
243	03/29/2018	SEALED RESPONSE in Opposition to Motion re 231 SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A - Declaration of Zhou Jun, # 2 Exhibit B - Declaration of Xia Yeliang, # 3 Text of Proposed Order)(Young, Stanley) (Entered: 03/29/2018)	
244	03/29/2018	RESPONSE in Opposition re 241 MOTION for Leave to File Exceed Page Limits on Huawei's Response to Plaintiff's Motion for	

#	Date	Proceeding Text	Source
		Sanctions filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/29/2018)	
245	03/30/2018	REPLY to Response to Motion re 241 MOTION for Leave to File Exceed Page Limits on Huawei's Response to Plaintiff's Motion for Sanctions filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 03/30/2018)	
246	04/02/2018	REDACTION to 243 Sealed Response to Motion, FOR SANCTIONS ON DEFENDANTS by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Young, Stanley) (Entered: 04/02/2018)	
247	04/03/2018	ORDER Granting 242 Unopposed MOTION to Withdraw as Counsel for Defendants ZTE Corporation and ZTE USA Inc. filed by ZTE USA Inc., ZTE Corporation., Attorney Timothy John Rawson now terminated.. Signed by District Judge Robert W. Schroeder, III on 4/3/2018. (sm,) (Entered: 04/03/2018)	
248	04/09/2018	Unopposed SEALED MOTION for Leave to File a Reply in Support of its Motion for Sanctions on Defendants Huawei Device USA INC. and Huawei Device Co., LTD by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit D, # 3 Exhibit E, # 4 Exhibit F, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/09/2018)	
249	04/10/2018	SEALED PATENT REPLY to Response to PATENT Motion re 231 SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. filed by Maxell Ltd.. (Attachments: # 1 Exhibit D, # 2 Exhibit E, # 3 Exhibit F)(Beaber, Jamie) (Entered: 04/10/2018)	
250	04/12/2018	AMENDED ANSWER to 72 Amended Complaint, , Amended COUNTERCLAIM against Maxell Ltd. by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 04/12/2018)	
251	04/13/2018	Unopposed MOTION for Leave to File a Sur-Reply to Plaintiff's Motion for Sanctions by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 04/13/2018)	
252	04/13/2018	SEALED SUR-REPLY to Motion re 231 SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD. filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3)(Ainsworth, Jennifer) (Entered: 04/13/2018)	
253	04/13/2018	REDACTION to 248 Unopposed SEALED MOTION for Leave to File a Reply in Support of its Motion for Sanctions on Defendants Huawei Device USA INC. and Huawei Device Co., LTD by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit D, # 3 Exhibit E, # 4 Exhibit F, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/13/2018)	
254	04/13/2018	REDACTION to 249 Sealed PATENT Reply to Response to PATENT Motion, by Maxell Ltd.. (Attachments: # 1 Exhibit D, # 2 Exhibit E, # 3 Exhibit F)(Beaber, Jamie) (Entered: 04/13/2018)	
255	04/16/2018	ORDER granting 248 Sealed Motion for Leave to File a Reply in Support of its motion for sanctions. Signed by District Judge Robert W. Schroeder, III on 4/16/2018. (sm,) (Entered: 04/16/2018)	
256	04/16/2018	ORDER granting 251 Motion for Leave to File a Surreply to Plaintiff's Motion for Sanctions. Signed by District Judge Robert W. Schroeder, III on 4/16/2018. (sm,) (Entered: 04/16/2018)	
257	04/17/2018	REDACTION to 252 Sealed Reply to Response to Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3)(Ainsworth, Jennifer)	

#	Date	Proceeding Text	Source
		(Entered: 04/17/2018)	
258	04/26/2018	ANSWER to 250 Amended Answer to Complaint, Counterclaim by Maxell Ltd..(Beaber, Jamie) (Entered: 04/26/2018)	
259	04/27/2018	Joint MOTION for Extension of Time to Complete Discovery (Expert Discovery) by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 04/27/2018)	
260	04/30/2018	ORDER granting 259 Motion for Extension of Time to Complete Expert Discovery until May 1, 2018. Signed by District Judge Robert W. Schroeder, III on 4/30/2018. (sm,) (Entered: 04/30/2018)	
261	04/30/2018	Opposed SEALED PATENT MOTION for Hearing on Motion for Sanctions and Related Filings by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/30/2018)	
262	05/02/2018	RESPONSE to Motion re 261 Opposed SEALED PATENT MOTION for Hearing on Motion for Sanctions and Related Filings filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 05/02/2018)	
263	05/04/2018	SEALED PATENT MOTION to Strike Portions of the Expert Report of Dr. Vojcic re the Validity of U.S. Patent No. 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
264	05/04/2018	STIPULATION of Dismissal - Joint Stipulation of Partial Dismissal by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
265	05/04/2018	**WITHDRAWN PER ORDER #411** SEALED PATENT MOTION to Strike Portions of Dr. Souri's Amended Expert Report on Infringement of U.S. Patent No. 7,671,901 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Text of Proposed Order)(Young, Stanley) Modified on 5/31/2018 (slo,). (Entered: 05/04/2018)	
266	05/04/2018	SEALED PATENT MOTION to Strike Portions of Dr. Braasch's Amended Expert Report on Infringement of U.S. Patent No. 6,928,292 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
267	05/04/2018	SEALED PATENT MOTION MAXELL, LTD.'S OPPOSED MOTION TO STRIKE PORTIONS OF DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD.'S NON-INFRINGEMENT EXPERT REPORTS THAT REBUT MAXELL'S VALIDITY EXPERT REPORTS by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit A - Expert Report of Dr. Robert Akl - Vol III., # 3 Exhibit B - Expert Report of Dr. Robert Akl - Vol I., # 4 Exhibit C - Expert Report of Dan Schonfeld - Vol I., # 5 Exhibit D - Expert Report of Dr. Robert Akl - Vol II., # 6 Exhibit E - Expert Report of Dr. Robert Akl - Vol IV., # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
268	05/04/2018	SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE DR. SCHONFELD'S UNRELIABLE OPINIONS BASED ON MR. FRY'S TESTING OF THE WINDOWS 98 AND MICROSOFT OFFICE 1997 REFERENCES by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A - Peter Fry Deposition, # 3 Exhibit B - Peter Fry Depo Exhibit, # 4 Exhibit C - Expert Report of Peter Fry, # 5 Exhibit D - Expert Report of Shukri J. Souri, # 6 Text of Proposed	

#	Date	Proceeding Text	Source
		Order)(Beaber, Jamie) (Entered: 05/04/2018)	
269	05/04/2018	SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
270	05/04/2018	Opposed MOTION for Summary Judgment by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A - Portions of Huawei's Fifth Supplemental Response to Maxell's First Set of Interrogatories, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
271	05/04/2018	SEALED PATENT MOTION for Summary Judgment Relating to U.S. Patent No. 7,116,438 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
272	05/04/2018	**WITHDRAWN PER ORDER #411** SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,671,901 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Text of Proposed Order)(Young, Stanley) Modified on 5/31/2018 (slo,). (Entered: 05/04/2018)	
273	05/04/2018	SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 6,928,292 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
274	05/04/2018	SEALED PATENT MOTION to Strike Portions of Maxell's Validity Reports Concerning Alleged Secondary Considerations of Non-Obviousness of the Asserted Claims by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
275	05/04/2018	**WITHDRAWN PER ORDER #411** SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 6,856,760 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Text of Proposed Order)(Young, Stanley) Modified on 5/31/2018 (slo,). (Entered: 05/04/2018)	
276	05/04/2018	**WITHDRAWN PER ORDER #411** SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 7,203,517 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Text of Proposed Order)(Young, Stanley) Modified on 5/31/2018 (slo,). (Entered: 05/04/2018)	
277	05/04/2018	SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. 102 AND 103 OF CLAIMS 1-2 OF U.S. PATENT NOS. 6,928,292 by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A - US6928292B2, # 3 Exhibit B - Expert Report of Dr. Robert Akl - Vol. I., # 4 Exhibit C - Cisneros, # 5 Exhibit D - Watters, # 6 Exhibit E - Nir, # 7 Exhibit F - Schuchman, # 8 Exhibit G - Part 1 - Karr, # 9 Exhibit G - Part 2 - Karr, # 10 Exhibit G - Part 3 - Karr, # 11 Exhibit G - Part 4 - Karr, # 12 Exhibit G - Part 5 - Karr, # 13 Exhibit G - Part 6 - Karr, # 14 Exhibit G - Part 7 - Karr, # 15 Exhibit H - Expert Report of Michael	

#	Date	Proceeding Text	Source
		Caloyannides, # 16 Exhibit I - US5173710, # 17 Exhibit J - 6928292 IPR Petition, # 18 Exhibit K - Akl Declaration re '292 IPR, # 19 Exhibit L - FH US6928292 (excerpts), # 20 Exhibit M - US 5365450, # 21 Exhibit N - Part 1 - US5663734, # 22 Exhibit N - Part 2 - US5663734, # 23 Exhibit O - 99_21098, # 24 Exhibit P - US 5999124, # 25 Exhibit Q - WO 99_61934, # 26 Exhibit R - US 5982324, # 27 Exhibit S - US 6002363, # 28 Exhibit T - Basile, # 29 Exhibit U - Lindemann, # 30 Exhibit V - Camp, # 31 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
278	05/04/2018	SEALED PATENT MOTION TO STRIKE PORTIONS OF DR. BRANIMIR VOJCICS AMENDED EXPERT REPORT ON INFRINGEMENT OF U.S. PATENT NOS. 7,203,517; 7,116,438; AND 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Exhibit L, # 13 Exhibit M, # 14 Exhibit N, # 15 Exhibit O, # 16 Exhibit P, # 17 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
279	05/04/2018	MOTION for Partial Summary Judgment MAXELL, LTD.'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,754,440 IN VIEW OF THE MPEGCAM AND DSC-F55 REFERENCES by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A - Expert Report of Dan Schonfeld, Ph.D., # 3 Exhibit B - Expert Report of Dan Schonfeld, Ph.D., # 4 Exhibit C - Part 1 - Huawei-HM_0028328, # 5 Exhibit C - Part 2 - Huawei, # 6 Exhibit C - Part 3 - Huawei, # 7 Exhibit D - Huawei-HM_0029473, # 8 Exhibit E - Huawei-HM_0028045, # 9 Exhibit F - Huawei-HM_0027210, # 10 Exhibit G - Part 1 - Huawei-HM_0027470, # 11 Exhibit G - Part 2 - Huawei, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
280	05/04/2018	SEALED PATENT MOTION FOR SUMMARY JUDGMENT OF NO PRE-NOTICE DAMAGES FOR U.S. PATENT NOS. 6,754,440 AND 7,116,438 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Exhibit L, # 13 Exhibit M, # 14 Exhibit N, # 15 Affidavit of Michael E. Bowlus, # 16 Text of Proposed Order)(Young, Stanley) (Entered: 05/04/2018)	
281	05/04/2018	SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE PORTIONS OF THE EXPERT REPORTS OF DR. DAN SCHONFELD AND DR. ROBERT AKL CONCERNING U.S. PATENTS NOS. 7,671,901, 6,856,760, AND 7,203,517 by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
282	05/04/2018	SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Text of Proposed Order)(Sharma, Anupam) (Entered: 05/04/2018)	
283	05/05/2018	SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF INFRINGEMENT OF U.S. PATENT	

#	Date	Proceeding Text	Source
		NO. 7,203,517 by Maxell Ltd.. (Attachments: # 1 Declaration of Bill Barrow, # 2 Exhibit A, # 3 Exhibit B - Part 1, # 4 Exhibit B - Part 2, # 5 Exhibit B - Part 3, # 6 Exhibit C, # 7 Exhibit D, # 8 Exhibit E, # 9 Exhibit F, # 10 Exhibit G - Part 1, # 11 Exhibit G - Part 2, # 12 Exhibit G - Part 3, # 13 Exhibit G - Part 4, # 14 Exhibit H, # 15 Exhibit I, # 16 Exhibit J, # 17 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/05/2018)	
284	05/08/2018	REDACTION to 267 SEALED PATENT MOTION MAXELL, LTD.'S OPPOSED MOTION TO STRIKE PORTIONS OF DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD.'S NON-INFRINGEMENT EXPERT REPORTS THAT REBUT MAXELL'S VALIDITY EXPERT REPORTS by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/08/2018)	
285	05/08/2018	REDACTION to 268 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE DR. SCHONFELD'S UNRELIABLE OPINIONS BASED ON MR. FRY'S TESTING OF THE WINDOWS 98 AND MICROSOFT OFFICE 1997 REFERENCES by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/08/2018)	
286	05/08/2018	REDACTION to 277 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. 102 AND 103 OF CLAIMS 1-2 OF U.S. PATENT NOS. 6,928,292 by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G - Part 1, # 9 Exhibit G - Part 2, # 10 Exhibit G - Part 3, # 11 Exhibit G - Part 4, # 12 Exhibit G - Part 5, # 13 Exhibit G - Part 6, # 14 Exhibit G - Part 7, # 15 Exhibit H, # 16 Exhibit I, # 17 Exhibit J, # 18 Exhibit K, # 19 Exhibit L, # 20 Exhibit M, # 21 Exhibit N, # 22 Exhibit O, # 23 Exhibit P, # 24 Exhibit Q, # 25 Exhibit R, # 26 Exhibit S, # 27 Exhibit T, # 28 Exhibit U, # 29 Exhibit V, # 30 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/08/2018)	
287	05/08/2018	REDACTION to 281 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE PORTIONS OF THE EXPERT REPORTS OF DR. DAN SCHONFELD AND DR. ROBERT AKL CONCERNING U.S. PATENTS NOS. 7,671,901, 6,856,760, AND 7,203,517 by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/08/2018)	
288	05/08/2018	REDACTION to 283 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF INFRINGEMENT OF U.S. PATENT NO. 7,203,517 by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/08/2018)	
289	05/08/2018	REDACTION to 263 SEALED PATENT MOTION to Strike Portions of the Expert Report of Dr. Vojcic re the Validity of U.S. Patent No. 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	

#	Date	Proceeding Text	Source
290	05/08/2018	REDACTION to 265 SEALED PATENT MOTION to Strike Portions of Dr. Souri's Amended Expert Report on Infringement of U.S. Patent No. 7,671,901 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
291	05/08/2018	REDACTION to 266 SEALED PATENT MOTION to Strike Portions of Dr. Braasch's Amended Expert Report on Infringement of U.S. Patent No. 6,928,292 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
292	05/08/2018	REDACTION to 269 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
293	05/08/2018	REDACTION to 271 SEALED PATENT MOTION for Summary Judgment Relating to U.S. Patent No. 7,116,438 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
294	05/08/2018	REDACTION to 272 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,671,901 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
295	05/08/2018	REDACTION to 273 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 6,928,292 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
296	05/08/2018	REDACTION to 274 SEALED PATENT MOTION to Strike Portions of Maxell's Validity Reports Concerning Alleged Secondary Considerations of Non-Obviousness of the Asserted Claims by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
297	05/08/2018	REDACTION to 275 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 6,856,760 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
298	05/08/2018	REDACTION to 276 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 7,203,517 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
299	05/08/2018	REDACTION to 278 SEALED PATENT MOTION TO STRIKE PORTIONS OF DR. BRANIMIR VOJCICS AMENDED EXPERT REPORT ON INFRINGEMENT OF U.S. PATENT NOS.	

#	Date	Proceeding Text	Source
		7,203,517; 7,116,438; AND 7,509,139 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Exhibit L, # 13 Exhibit M, # 14 Exhibit N, # 15 Exhibit O, # 16 Exhibit P, # 17 Text of Proposed Order)(Young, Stanley) (Entered: 05/08/2018)	
300	05/08/2018	REDACTION to 280 SEALED PATENT MOTION FOR SUMMARY JUDGMENT OF NO PRE-NOTICE DAMAGES FOR U.S. PATENT NOS. 6,754,440 AND 7,116,438 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Exhibit L, # 13 Exhibit M, # 14 Exhibit N, # 15 Affidavit of Michael Bowlus, # 16 Text of Proposed Order)(Young, Stanley) (Entered: 05/09/2018)	
301	05/09/2018	REDACTION to 282 SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Text of Proposed Order)(Sharma, Anupam) (Entered: 05/09/2018)	
302	05/09/2018	ORDER re 264 Stipulation of Partial Dismissal filed by Maxell Ltd. ORDERING certain claims and counterclaims present in Maxell's Second Amended Complaint be Dismissed. Signed by District Judge Robert W. Schroeder, III on 5/9/2018. (sm,) (Entered: 05/09/2018)	
303	05/11/2018	ORDER Setting Hearing on 231 SEALED MOTION FOR SANCTIONS ON DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD., GRANTING 261 Opposed SEALED PATENT MOTION for Hearing on Motion for Sanctions and Related Filings (Motion Hearing set for 5/30/2018 09:00 AM in Ctrm 319 (Texarkana), same time as Dispositive Motion Hearing, before District Judge Robert W. Schroeder III.),. Signed by District Judge Robert W. Schroeder, III on 5/11/2018. (sm,) (Entered: 05/11/2018)	
304	05/11/2018	NOTICE by Maxell Ltd. Notice of Request for Daily Transcript and Real Time Reporting of Pre-Trial Conference and Trial Proceedings (Culbertson, Geoffrey) (Entered: 05/11/2018)	
305	05/11/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc Notice of Request for Real Time Reporting and Daily Transcripts of Court Proceedings (Ainsworth, Jennifer) (Entered: 05/11/2018)	
306	05/14/2018	***DEFICIENT DOCUMENT, PLEASE IGNORE***Emergency MOTION to Continue, for Entry of Amended Docket Control Order, and Motion for Leave to Take Additional Discovery by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) Modified on 5/15/2018 (sm,). Modified on 5/15/2018 (sm,). (Entered: 05/14/2018)	
307	05/14/2018	Unopposed MOTION to Expedite Briefing on Maxell's Emergency Motion for Continuance, Motion for Entry of Amended Docket Control Order, and Motion for Leave to Take Additional Discovery by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/14/2018)	
	05/15/2018	NOTICE of DEFICIENCY regarding the #306 Emergency Motion submitted by Maxell Ltd.. Motions docketed as one instead of separately filed. Correction should be made by 1 business day	

#	Date	Proceeding Text	Source
		and refiled as 2 separate motions. Motion is now Terminated. (sm,) (Entered: 05/15/2018)	
308	05/15/2018	Emergency MOTION to Continue and Entry of Amended Docket Control Order by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/15/2018)	
309	05/15/2018	Unopposed MOTION Leave to Take Additional Discovery by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/15/2018)	
310	05/15/2018	Amended SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales, Docket 282 by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15 (Amended), # 16 Text of Proposed Order)(Sharma, Anupam) (Entered: 05/15/2018)	
311	05/15/2018	ORDER granting 307 Motion to Expedite Briefing on Emergency Motion for Continuance and ORDERED that Defendants have to file their response by 5 pm on May 16, 2018. Signed by District Judge Robert W. Schroeder, III on 5/15/2018. (sm,) (Entered: 05/15/2018)	
312	05/15/2018	REDACTION to 310 Amended SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales, Docket 282 (AMENDED, Docket 301) by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15 (Amended), # 16 Text of Proposed Order)(Sharma, Anupam) (Entered: 05/15/2018)	
313	05/16/2018	ORDER/NOTICE of Hearing: TELEPHONIC Status Conference set for 5/18/2018 10:00 AM before District Judge Robert W. Schroeder III.. Signed by District Judge Robert W. Schroeder, III on 5/16/2018. (sm,) (Entered: 05/16/2018)	
314	05/16/2018	RESPONSE in Opposition re 308 Emergency MOTION to Continue and Entry of Amended Docket Control Order filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 05/16/2018)	
	05/17/2018	NOTICE of Hearing: TIME CHANGE ONLY: Telephonic Status Conference RESET for 5/18/2018 01:30 PM before District Judge Robert W. Schroeder III. (SMC) (Entered: 05/17/2018)	
315	05/17/2018	NOTICE by Maxell Ltd. Notice of Joint Proposed Juror Questionnaire (Attachments: # 1 Exhibit Joint Proposed Juror Questionnaire)(Culbertson, Geoffrey) (Entered: 05/17/2018)	
316	05/17/2018	ORDER granting 309 Motion for Leave to take additional discovery. Signed by District Judge Robert W. Schroeder, III on 5/17/2018. (sm,) (Entered: 05/18/2018)	
317	05/18/2018	NOTICE by Maxell Ltd. Joint Notice of Jury Selection and Trial Time Requested (Culbertson, Geoffrey) (Entered: 05/18/2018)	
	05/18/2018	Telephonic status conference held on 5/18/2018 before District Judge Robert W. Schroeder III. Attorneys participating were Geoff Culbertson, Jamie Beaber, Kfir Levy, Tripp Fussell, Jennifer Ainsworth, Stanley Young, Robert Hasham and Anupam Sharma. (Court Reporter Shea Sloan.) (SMC) (Entered: 05/18/2018)	
318	05/18/2018	SEALED RESPONSE to Motion re 280 SEALED PATENT MOTION FOR SUMMARY JUDGMENT OF NO PRE-NOTICE	

#	Date	Proceeding Text	Source
		DAMAGES FOR U.S. PATENT NOS. 6,754,440 AND 7,116,438 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
319	05/18/2018	SEALED RESPONSE to Motion re 310 Amended SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales, Docket 282 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
320	05/18/2018	SEALED RESPONSE to Motion re 274 SEALED PATENT MOTION to Strike Portions of Maxell's Validity Reports Concerning Alleged Secondary Considerations of Non-Obviousness of the Asserted Claims filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
321	05/18/2018	RESPONSE in Opposition re 265 SEALED PATENT MOTION to Strike Portions of Dr. Souri's Amended Expert Report on Infringement of U.S. Patent No. 7,671,901 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit A, # 3 Exhibit B, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
322	05/18/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 283 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF INFRINGEMENT OF U.S. PATENT NO. 7,203,517 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
323	05/18/2018	RESPONSE in Opposition re 268 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE DR. SCHONFELD'S UNRELIABLE OPINIONS BASED ON MR. FRY'S TESTING OF THE WINDOWS 98 AND MICROSOFT OFFICE 1997 REFERENCES filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
324	05/18/2018	RESPONSE in Opposition re 263 SEALED PATENT MOTION to Strike Portions of the Expert Report of Dr. Vojcic re the Validity of U.S. Patent No. 7,509,139 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit A, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
325	05/18/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 267 SEALED PATENT MOTION MAXELL, LTD.'S OPPOSED MOTION TO STRIKE PORTIONS OF DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD.'S NON-INFRINGEMENT EXPERT REPORTS THAT REBUT MAXELL'S VALIDITY EXPERT REPORTS filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
326	05/18/2018	SEALED RESPONSE to Motion re 266 SEALED PATENT MOTION to Strike Portions of Dr. Braasch's Amended Expert Report on Infringement of U.S. Patent No. 6,928,292 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Michael Lindinger, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit	

#	Date	Proceeding Text	Source
		E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
327	05/18/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 279 MOTION for Partial Summary Judgment MAXELL, LTD.'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,754,440 IN VIEW OF THE MPEGCAM AND DSC-F55 REFERENCES filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C-1, # 4 Exhibit C-2, # 5 Exhibit C-3, # 6 Exhibit D-1, # 7 Exhibit D-2, # 8 Exhibit D-3, # 9 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
328	05/18/2018	SEALED RESPONSE to Motion re 271 SEALED PATENT MOTION for Summary Judgment Relating to U.S. Patent No. 7,116,438 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
329	05/18/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 270 Opposed MOTION for Summary Judgment filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
330	05/18/2018	SEALED RESPONSE to Motion re 272 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,671,901 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
331	05/18/2018	SEALED RESPONSE to Motion re 273 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 6,928,292 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Michael Lindinger, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
332	05/18/2018	RESPONSE in Opposition re 277 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. 102 AND 103 OF CLAIMS 1-2 OF U.S. PATENT NOS. 6,928,292 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit C-01, # 5 Exhibit C-02, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H, # 11 Exhibit I, # 12 Exhibit J, # 13 Exhibit K, # 14 Exhibit L, # 15 Exhibit M, # 16 Exhibit N, # 17 Exhibit O, # 18 Exhibit P, # 19 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
333	05/18/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 281 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE PORTIONS OF THE EXPERT REPORTS OF DR. DAN SCHONFELD AND DR. ROBERT AKL CONCERNING U.S. PATENTS NOS. 7,671,901, 6,856,760, AND 7,203,517 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Text of Proposed Order)(Young, Stanley) (Entered: 05/18/2018)	
334	05/18/2018	SEALED RESPONSE to Motion re 275 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S.	

#	Date	Proceeding Text	Source
		PATENT 6,856,760 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
335	05/18/2018	SEALED RESPONSE to Motion re 276 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 7,203,517 filed by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
336	05/18/2018	SEALED RESPONSE to Motion re 278 SEALED PATENT MOTION TO STRIKE PORTIONS OF DR. BRANIMIR VOJCICS AMENDED EXPERT REPORT ON INFRINGEMENT OF U.S. PATENT NOS. 7,203,517; 7,116,438; AND 7,509,139 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
337	05/18/2018	SEALED RESPONSE to Motion re 269 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,509,139 filed by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2018)	
338	05/21/2018	Emergency MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only by Maxell Ltd.. (Attachments: # 1 Exhibit A E-mail K. Levy and A. Sharma, # 2 Text of Proposed Order Amended Docket Control Order as to Pretrial Filings Only)(Culbertson, Geoffrey) (Entered: 05/21/2018)	
339	05/21/2018	Unopposed MOTION to Expedite Briefing on it's Emergency Motion for Entry of Amended Docket Control Order as to Pretrial Filings by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/21/2018)	
340	05/21/2018	***FILED IN ERROR, PER ATTORNEY, PLEASE IGNORE***NOTICE by Maxell Ltd. re 338 Emergency MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only Notice of Revised Proposed Order (Culbertson, Geoffrey) Modified on 5/21/2018 (sm,). (Entered: 05/21/2018)	
	05/21/2018	***FILED IN ERROR,PER ATTORNEY, ATTORNEY WILL REFILE. Document # 340, Notice. PLEASE IGNORE.*** (sm,) (Entered: 05/21/2018)	
341	05/21/2018	NOTICE by Maxell Ltd. re 338 Emergency MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only Notice of Revised Proposed Order (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/21/2018)	
342	05/22/2018	ORDER re 341 Notice, Granting 339 Motion to Expedite Briefing on Emergency Motion for Entry of Amended Docket Control Order and THEREFORE ORDERED that Defendants file its response by 5/22/2018. Signed by District Judge Robert W. Schroeder, III on 5/22/2018. (sm,) (Entered: 05/22/2018)	
343	05/22/2018	RESPONSE to Motion re 338 Emergency MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Text of Proposed Order)(Ainsworth, Jennifer) (Entered: 05/22/2018)	
344	05/22/2018	REDACTION to 318 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Beaber,	

#	Date	Proceeding Text	Source
		Jamie) (Entered: 05/22/2018)	
345	05/22/2018	REDACTION to 319 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
346	05/22/2018	REDACTION to 320 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
347	05/22/2018	REDACTION to 326 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
348	05/22/2018	REDACTION to 328 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
349	05/22/2018	REDACTION to 330 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
350	05/22/2018	REDACTION to 331 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
351	05/22/2018	REDACTION to 334 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib Siddiqui, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
352	05/22/2018	REDACTION to 335 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
353	05/22/2018	REDACTION to 336 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
354	05/22/2018	REDACTION to 337 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/22/2018)	
355	05/22/2018	REDACTION to 327 Sealed Patent Response to Sealed Patent Motion,, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C-1, # 4 Exhibit C-2, # 5 Exhibit C-3, # 6 Exhibit D-1, # 7 Exhibit D-2, # 8 Exhibit D-3, # 9 Text of Proposed Order)(Young, Stanley) (Entered: 05/22/2018)	
356	05/22/2018	REDACTION to 322 Sealed Patent Response to Sealed Patent Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Text of Proposed Order)(Young, Stanley) (Entered: 05/22/2018)	
357	05/22/2018	REDACTION to 333 Sealed Patent Response to Sealed Patent Motion,, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13	

#	Date	Proceeding Text	Source
		Exhibit 13, # 14 Exhibit 14, # 15 Text of Proposed Order)(Young, Stanley) (Entered: 05/22/2018)	
358	05/22/2018	REDACTION to 329 Sealed Patent Response to Sealed Patent Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Text of Proposed Order)(Young, Stanley) (Entered: 05/22/2018)	
359	05/22/2018	REDACTION to 325 Sealed Patent Response to Sealed Patent Motion,, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Text of Proposed Order)(Young, Stanley) (Entered: 05/22/2018)	
360	05/22/2018	NOTICE by Huawei Device Co., Ltd., Huawei Device USA Inc OF COMPLIANCE WITH 35 U.S.C. § 282 (Young, Stanley) (Entered: 05/22/2018)	
361	05/23/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Status Conference Proceedings held on 5/18/2018 before Judge Robert W. Schroeder III. Court Reporter: Shea Sloan, shea_sloan@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 6/13/2018. Redacted Transcript Deadline set for 6/25/2018. Release of Transcript Restriction set for 8/21/2018. (sms,) (Entered: 05/23/2018)	
362	05/23/2018	ORDER granting as MODIFIED 338 Motion to Amend/Correct the Docket Control Order and Court SETS following deadlines. Signed by District Judge Robert W. Schroeder, III on 5/23/2018. (sm,) (Entered: 05/23/2018)	
363	05/23/2018	STATUS REPORT (Joint Status Update) re: Plaintiff Maxell, LTD's Emergency Motion for Continuance and Motion for Entry of Amended Docket Control Order by Maxell Ltd.. (Culbertson, Geoffrey) (Entered: 05/23/2018)	
364	05/23/2018	SEALED REPLY to Response to Motion re 269 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,509,139 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/23/2018)	
365	05/23/2018	SEALED REPLY to Response to Motion re 273 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 6,928,292 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 8, # 2 Exhibit 9, # 3 Exhibit 10)(Young, Stanley) (Entered: 05/23/2018)	
366	05/23/2018	SEALED PATENT REPLY to Response to PATENT Motion re 280 SEALED PATENT MOTION FOR SUMMARY JUDGMENT OF NO PRE-NOTICE DAMAGES FOR U.S. PATENT NOS. 6,754,440 AND 7,116,438 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/23/2018)	
367	05/23/2018	SEALED PATENT REPLY to Response to PATENT Motion re 275 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 6,856,760 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 10, #	

#	Date	Proceeding Text	Source
		2 Exhibit 11)(Young, Stanley) (Entered: 05/23/2018)	
368	05/23/2018	REDACTION to 364 Sealed Reply to Response to Motion by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/23/2018)	
369	05/23/2018	REDACTION to 365 Sealed Reply to Response to Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 8, # 2 Exhibit 9, # 3 Exhibit 10)(Young, Stanley) (Entered: 05/23/2018)	
370	05/23/2018	REDACTION to 366 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/23/2018)	
371	05/24/2018	NOTICE Of ZTE'S Position Regarding Maxell's Emergency Motion by ZTE USA Inc. re 363 Status Report Opposing Change in Order of Trials (Attachments: # 1 Affidavit Declaration of Steven A. Moore, Ph.D. in support of ZTE's Notice of Position Regarding Trial Order)(O'Connell, Sara) Modified on 5/24/2018 (sm,). (Entered: 05/24/2018)	
372	05/24/2018	NOTICE of Request for Judicial Notice of the USPTO'S Decisions to Institute Inter Partes Review of U.S. Patent Nos. 6,928,292, 7,509,139, and 6,754,440 by Huawei Device Co., Ltd., Huawei Device USA Inc (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C)(Young, Stanley) (Entered: 05/24/2018)	
373	05/24/2018	SEALED PATENT REPLY to Response to PATENT Motion re 271 SEALED PATENT MOTION for Summary Judgment Relating to U.S. Patent No. 7,116,438 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit F, # 2 Exhibit G)(Young, Stanley) (Entered: 05/24/2018)	
374	05/24/2018	SEALED PATENT REPLY to Response to PATENT Motion re 276 SEALED PATENT MOTION FOR SUMMARY JUDGMENT RELATING TO U.S. PATENT 7,203,517 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 5)(Young, Stanley) (Entered: 05/24/2018)	
375	05/24/2018	NOTICE by Maxell Ltd. Regarding 371 ZTE's Opposition to Changing Order of Trials (Attachments: # 1 Exhibit 1)(Beaber, Jamie) (Entered: 05/24/2018)	
376	05/25/2018	REPLY to Response to Motion re 279 MOTION for Partial Summary Judgment MAXELL, LTD.'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,754,440 IN VIEW OF THE MPEGCAM AND DSC-F55 REFERENCES filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/25/2018)	
377	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 281 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE PORTIONS OF THE EXPERT REPORTS OF DR. DAN SCHONFELD AND DR. ROBERT AKL CONCERNING U.S. PATENTS NOS. 7,671,901, 6,856,760, AND 7,203,517 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D)(Beaber, Jamie) (Entered: 05/25/2018)	
378	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 283 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF INFRINGEMENT OF U.S. PATENT NO. 7,203,517 filed by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit A)(Beaber, Jamie) (Entered: 05/25/2018)	
379	05/25/2018	REPLY to Response to Motion re 267 SEALED PATENT MOTION MAXELL, LTD.'S OPPOSED MOTION TO STRIKE PORTIONS OF DEFENDANTS HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD.'S NON-INFRINGEMENT EXPERT REPORTS	

#	Date	Proceeding Text	Source
		THAT REBUT MAXELL'S VALIDITY EXPERT REPORTS filed by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit F)(Beaber, Jamie) (Entered: 05/25/2018)	
380	05/25/2018	REPLY to Response to Motion re 268 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE DR. SCHONFELD'S UNRELIABLE OPINIONS BASED ON MR. FRY'S TESTING OF THE WINDOWS 98 AND MICROSOFT OFFICE 1997 REFERENCES filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/25/2018)	
381	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 272 SEALED PATENT MOTION for Summary Judgment of Non-Infringement of U.S. Patent No. 7,671,901 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/25/2018)	
382	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 310 Amended SEALED PATENT MOTION to Exclude Carla Mulhern's Opinions Relating to Jury Verdicts From Three Prior Litigations and Opinions Relating to Royalty Damages From Future Sales, Docket 282 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 16)(Young, Stanley) (Entered: 05/25/2018)	
383	05/25/2018	REPLY to Response to Motion re 277 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. 102 AND 103 OF CLAIMS 1-2 OF U.S. PATENT NOS. 6,928,292 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/25/2018)	
384	05/25/2018	Additional Attachments to Main Document: 377 Sealed PATENT Reply to Response to PATENT Motion,.. (Beaber, Jamie) (Entered: 05/25/2018)	
385	05/25/2018	RESPONSE to 372 Notice (Other), OBJECTION TO HUAWEI DEVICE USA INC. AND HUAWEI DEVICE CO., LTD.S REQUEST FOR JUDICIAL NOTICE OF THE USPTOS DECISIONS TO INSTITUTE INTER PARTES REVIEW OF U.S. PATENT NOS. 6,928,292, 7,509,139, AND 6,754,440 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/25/2018)	
386	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 265 SEALED PATENT MOTION to Strike Portions of Dr. Souri's Amended Expert Report on Infringement of U.S. Patent No. 7,671,901 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 5, # 2 Exhibit 6)(Young, Stanley) (Entered: 05/25/2018)	
387	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 266 SEALED PATENT MOTION to Strike Portions of Dr. Braasch's Amended Expert Report on Infringement of U.S. Patent No. 6,928,292 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 6, # 2 Exhibit 7)(Young, Stanley) (Entered: 05/25/2018)	
388	05/25/2018	REPLY to Response to Motion re 263 SEALED PATENT MOTION to Strike Portions of the Expert Report of Dr. Vojcic re the Validity of U.S. Patent No. 7,509,139 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 4)(Young, Stanley) (Entered: 05/25/2018)	
389	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 278 SEALED PATENT MOTION TO STRIKE PORTIONS OF DR. BRANIMIR VOJCICS AMENDED EXPERT REPORT ON INFRINGEMENT OF U.S. PATENT NOS. 7,203,517; 7,116,438; AND 7,509,139 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/25/2018)	
390	05/25/2018	SEALED PATENT REPLY to Response to PATENT Motion re 274	

#	Date	Proceeding Text	Source
		SEALED PATENT MOTION to Strike Portions of Maxell's Validity Reports Concerning Alleged Secondary Considerations of Non-Obviousness of the Asserted Claims filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/25/2018)	
391	05/25/2018	REDACTION to 374 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 5)(Young, Stanley) (Entered: 05/25/2018)	
392	05/25/2018	REDACTION to 367 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 10, # 2 Exhibit 11)(Young, Stanley) (Entered: 05/25/2018)	
393	05/25/2018	REDACTION to 382 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 16)(Young, Stanley) (Entered: 05/25/2018)	
394	05/25/2018	REDACTION to 381 Sealed PATENT Reply to Response to PATENT Motion by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/25/2018)	
395	05/29/2018	ORDER RESETTING HEARING, (Pretrial Conference reset for 6/6/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.). Signed by District Judge Robert W. Schroeder, III on 5/29/2018. (sm,) (Entered: 05/29/2018)	
396	05/29/2018	SUR-REPLY to Reply to Response to Motion re 277 SEALED PATENT MOTION MAXELL, LTD.'S MOTION FOR SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. 102 AND 103 OF CLAIMS 1-2 OF U.S. PATENT NOS. 6,928,292 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit Q)(Young, Stanley) (Entered: 05/29/2018)	
397	05/29/2018	ORDER REGARDING DISPOSITIVE MOTION HEARING, (Dispositive Motion Hearing reset for 5/30/2018 at 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.). Signed by District Judge Robert W. Schroeder, III on 5/29/2018. (sm,) (Entered: 05/29/2018)	
398	05/29/2018	SEALED SUR-REPLY to Response to Motion re 280 SEALED PATENT MOTION FOR SUMMARY JUDGMENT OF NO PRE-NOTICE DAMAGES FOR U.S. PATENT NOS. 6,754,440 AND 7,116,438 filed by Maxell Ltd.. (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 05/29/2018)	
399	05/29/2018	REDACTION to 373 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit F, # 2 Exhibit G)(Young, Stanley) (Entered: 05/29/2018)	
400	05/29/2018	REDACTION to 389 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/29/2018)	
401	05/29/2018	REDACTION to 386 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 5, # 2 Exhibit 6)(Young, Stanley) (Entered: 05/29/2018)	
402	05/29/2018	SUR-REPLY to Reply to Response to Motion re 281 SEALED PATENT MOTION MAXELL, LTD.'S DAUBERT MOTION TO EXCLUDE PORTIONS OF THE EXPERT REPORTS OF DR. DAN SCHONFELD AND DR. ROBERT AKL CONCERNING U.S. PATENTS NOS. 7,671,901, 6,856,760, AND 7,203,517 filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 05/29/2018)	

#	Date	Proceeding Text	Source
403	05/29/2018	NOTICE by Maxell Ltd. Joint Notice of Proposed Verdict Form (Attachments: # 1 Exhibit Proposed Verdict Form)(Culbertson, Geoffrey) (Entered: 05/29/2018)	
404	05/29/2018	NOTICE by Maxell Ltd. Joint Notice of Proposed Jury Instructions (Attachments: # 1 Exhibit Joint Proposed Jury Instructions, # 2 Appendix A - Jury Instructions)(Culbertson, Geoffrey) (Entered: 05/29/2018)	
405	05/29/2018	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 279 MOTION for Partial Summary Judgment MAXELL, LTD.'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,754,440 IN VIEW OF THE MPEGCAM AND DSC-F55 REFERENCES filed by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit E)(Young, Stanley) (Entered: 05/29/2018)	
406	05/29/2018	Sealed Document (Joint Final Pretrial Order). (Attachments: # 1 Exhibit A- Maxell Witness List, # 2 Exhibit B- Huawei Witness List, # 3 Exhibit C-Maxell Depo Designations, # 4 Exhibit D- Huawei Depo Designations, # 5 Exhibit E- Maxell Exhibit List, # 6 Exhibit F- Huawei Exhibit List)(Culbertson, Geoffrey) Modified on 5/30/2018 (sm,). (Entered: 05/29/2018)	
407	05/30/2018	REDACTION to 377 Sealed PATENT Reply to Response to PATENT Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D)(Beaber, Jamie) (Entered: 05/30/2018)	
408	05/30/2018	REDACTION to 378 Sealed PATENT Reply to Response to PATENT Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Willam J. Barrow, # 2 Exhibit A)(Beaber, Jamie) (Entered: 05/30/2018)	
409	05/30/2018	REDACTION to 398 Sealed Reply to Response to Motion by Maxell Ltd.. (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 05/30/2018)	
410	05/30/2018	Joint MOTION to Stay by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 05/30/2018)	
411	05/31/2018	ORDER GRANTING 410 Joint MOTION to Stay filed by Maxell Ltd. It is ORDERED that the motion to stay is GRANTED and this case is hereby STAYED pending final resolution, including appeals, of Huawei's instituted IPRs, IPR2018-00210, IPR2018-00233 and IPR2018-00209, and of any pending IPRs on the patents-in-suit that Huawei has previously filed. Parties motion to withdraw Docket Nos. 231 , 265 , 272 , 275 and 276 is GRANTED with prejudice to refiling same. All pending motions between Plaintiff Maxell and the Huawei Defendants not withdrawn above are DENIED WITHOUT PREJUDICE. Signed by District Judge Robert W. Schroeder III on 5/31/2018. (slo,) (Entered: 05/31/2018)	
412	05/31/2018	REDACTION to 405 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit E)(Young, Stanley) (Entered: 05/31/2018)	
413	05/31/2018	ORDER. (The Clerk is directed to docket the following motions from Maxell, Ltd. v. Huawei Technologies Co. Ltd. et al, Case No. 5:16-cv-178 in Maxell, Ltd. v. ZTE Corporation et al, Case No. 5:16-cv-179: Docket Nos. 124, 184, 194 and 196-209.) Signed by District Judge Robert W. Schroeder III on 5/31/2018. (slo,) (Entered: 06/01/2018)	
414	06/04/2018	REDACTION to 387 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Attachments: # 1 Exhibit 6, # 2 Exhibit 7)(Young, Stanley) (Entered: 06/04/2018)	

#	Date	Proceeding Text	Source
415	06/04/2018	REDACTION to 390 Sealed PATENT Reply to Response to PATENT Motion, by Huawei Device Co., Ltd., Huawei Device USA Inc. (Young, Stanley) (Entered: 06/04/2018)	
416	10/03/2018	NOTICE of Change of Address by Stanley Young (Young, Stanley) (Entered: 10/03/2018)	
417	01/03/2019	REPORT of Mediation by David Folsom. Mediation result: suspended (ZTE)(Folsom, David) (Entered: 01/03/2019)	
418	02/18/2019	NOTICE of Settlement by Maxell Ltd. (Culbertson, Geoffrey) (Entered: 02/18/2019)	
419	02/18/2019	SEALED ADDITIONAL ATTACHMENTS to Main Document: 418 Notice of Settlement. Exhibit A Memorandum of Understanding(Culbertson, Geoffrey) (Entered: 02/18/2019)	
420	02/19/2019	REPORT of Mediation by David Folsom. Mediation result: 2nd report (settled)(Folsom, David) (Entered: 02/19/2019)	
421	04/02/2019	Joint MOTION to Dismiss by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order Order)(Culbertson, Geoffrey) (Entered: 04/02/2019)	
422	04/02/2019	Proposed Agreed Judgment Final Judgment. (Culbertson, Geoffrey) (Entered: 04/02/2019)	
423	04/04/2019	ORDER granting 421 Joint Motion to Dismiss. It is therefore ORDERED that all claims of Plaintiff Maxell, Ltd. (Maxell) against Huawei Device USA, Inc., and Huawei Device Co., Ltd. (Huawei) are hereby DISMISSED WITHOUT PREJUDICE. It is further ORDERED that all counterclaims of Huawei against Maxell are hereby DISMISSED WITHOUT PREJUDICE. Each party shall bear its own costs in connection herewith. Signed by District Judge Robert W. Schroeder, III on 04/04/19. (lfs,) (Entered: 04/04/2019)	
424	04/04/2019	FINAL JUDGMENT. It is ORDERED, ADJUDGED and DECREED that the parties take nothing and all costs are to be borne by the party that incurred them. Any remaining relief requested by any party is hereby DENIED. The Clerk of the Court is directed to close this case. Signed by District Judge Robert W. Schroeder, III on 04/04/19. (lfs,) (Entered: 04/04/2019)	
425	04/04/2019	Notice of Filing of Patent/Trademark Form (AO 120) at termination of case. AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (slo,) (Entered: 04/04/2019)	

Patents

Number	Title	Issued	Class	Subclass
5,396,443	Information processing apparatus including arrangements for activation to and deactivation from a power-saving state	03/07/1995	713	321
7,509,139	Method for selecting base station	03/24/2009	455	525
6,754,440	Video reproducing method and apparatus	06/22/2004	386	353
6,928,292	Mobile handset with position calculation function	08/09/2005	455	456.1
7,203,517	Mobile communication terminal device	04/10/2007	455	557
7,671,901	Image processing apparatus and mobile terminal apparatus	03/02/2010	348	229.1

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End of Document



User Name: Renee Preston
Date and Time: Tuesday, December 22, 2020 4:28:00 PM EST
Job Number: 132759139

Document (1)

1. *IPR2016-00909, Olympus Corporation Vs. Maxell, Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2018-00909, Olympus Corporation Vs. Maxell, Ltd.

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 12/22/2020

Header

Case Number: IPR2018-00909
Date Filed: 06/20/2018
Date Full Case Retrieved: 12/22/2020
Status: Closed
Misc: (0) Unknown; Civil

Summary

Court Case Status: Terminated
Case Type: IPR: Inter partes review
Technical Center Number: 2600
Patent Application Number: 14264243
Patent Number: 9100604

Participants

Litigants	Attorneys
Olympus Corporation **Petitioner**	
Maxell, Ltd. **PatentOwner**	

Proceedings

Date	#	Proceeding Text	Details
06/20/2018		Power of Attorney	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public?

Renee Preston

Date	#	Proceeding Text	Details
			Yes
06/20/2018		Ex. 1001 - US8339493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
06/20/2018		Ex. 1002 - US8059177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
06/20/2018		Ex. 1005 - US5444482 Misawa	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
06/20/2018		Ex. 1012 - File History to 12845266 - US 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
06/20/2018		Ex. 1003 - US9100604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
06/20/2018		Ex. 1006 - US6700607 Misawa	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1006 Public? Yes
06/20/2018		Ex. 1007 - US6292218 Parulski	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
06/20/2018		Ex. 1008 - US6529236 Watanabe	Filed By: petitioner

Date	#	Proceeding Text	Details
			Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
06/20/2018		Ex. 1009 - US5990947 Okino	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1009 Public? Yes
06/20/2018		Ex. 1010 - US6757013 Matsuzaka	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010 Public? Yes
06/20/2018		Ex. 1011 - JP-H3-1117985-A Egawa_English and Japanese	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1011 Public? Yes
06/20/2018		Ex. 1013 - File History to 10660710 - US 8,059,177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes
06/20/2018		Ex. 1014 - File History to 14264243 - US 9,100,604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
06/20/2018		Ex. 1015 - 5-16-cv-00178 Claim Construction Order	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015 Public? Yes
06/20/2018		Ex. 1016 - Excerpt of File History to 09520836 - US 6,765,616	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1016

Date	#	Proceeding Text	Details
			Public? Yes
06/20/2018		Ex. 1017 - As-filed specification of U.S. Patent Application No. 07997862	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1017 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration2 Appendices AA-ZZ	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration1 Appendices A-Z	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Petition for Inter Partes Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
06/20/2018		Ex. 1004 - Paruiski Declaration3 Appendices AAA-MMM	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
07/09/2018		IPR2018-00909 Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
07/09/2018		IPR2018-00909 Mandatory Notices	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
07/17/2018		Notice of Accord Filing Date	Filed By:

Date	#	Proceeding Text	Details
			board Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
10/17/2018		Patent Owner's Preliminary Response	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
12/18/2018		Authorized Joint Request to File Agreement as Business Confidential Information Pursuant to 35 U.S.C. 317(b)	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
12/18/2018		Petitioner's Authorized Unopposed Motion to Dismiss Proceeding with Prejudice	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 7 Public? Yes
12/26/2018		Termination Decision Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
01/30/2019		Petitioner's Request for Refund	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes
03/05/2019		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes
03/05/2019		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No:

Date	#	Proceeding Text	Details
			12 Public? Yes

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Job Number: 132759268

Document (1)

1. *IPR2016-00910, Olympus Corporation Vs. Maxell, Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2018-00910, Olympus Corporation Vs. Maxell, Ltd.

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 12/22/2020

Header

Case Number: IPR2018-00910
Date Filed: 06/20/2018
Date Full Case Retrieved: 12/22/2020
Status: Closed
Misc: (0) Unknown; Civil

Summary

Court Case Status: Terminated
Case Type: IPR: Inter partes review
Technical Center Number: 2600
Patent Application Number: 10660710
Patent Number: 8059177

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Date	#	Proceeding Text	Details
06/20/2018		Power of Attorney	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public?

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Date	#	Proceeding Text	Details
			Yes
06/20/2018		Ex. 1001 - US8339493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
06/20/2018		Ex. 1002 - US8059177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
06/20/2018		Ex. 1003 - US9100604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
06/20/2018		Ex. 1007 - US6292218 Parulski	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
06/20/2018		Ex. 1008 - US6529236 Watanabe	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
06/20/2018		Ex. 1010 - US6757013 Matsuzaka	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010 Public? Yes
06/20/2018		Ex. 1012 - File History to 12845266 - US 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
06/20/2018		Ex. 1005 - US5444482 Misawa	Filed By: petitioner

Date	#	Proceeding Text	Details
			Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
06/20/2018		Ex. 1006 - US6700607 Misawa	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1006 Public? Yes
06/20/2018		Ex. 1009 - US5990947 Okino	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1009 Public? Yes
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06/20/2018		Ex. 1016 - Excerpt of File History to 09520836 - US 6,765,616	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1016 Public? Yes
06/20/2018		Ex. 1013 - File History to 10660710 - US 8,059,177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes
06/20/2018		Ex. 1014 - File History to 14264243 - US 9,100,604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
06/20/2018		Ex. 1015 - 5-16-cv-00178 Claim Construction Order	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015

Date	#	Proceeding Text	Details
			Public? Yes
06/20/2018		Ex. 1017 - As-filed specification of U.S. Patent Application No. 07997862	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1017 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration1 Appendices A-Z	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration3 Appendices AAA-MMM	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration2 Appendices AA-ZZ	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Petition for Inter Partes Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
07/09/2018		IPR2018-00910 Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
07/09/2018		IPR2018-00910 Mandatory Notices	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
08/09/2018		Notice of Accord Filing Date	Filed By:

Date	#	Proceeding Text	Details
			board Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
11/09/2018		Patent Owner's Preliminary Response	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
11/09/2018		Japanese Patent Publication No. H11-355665	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2001 Public? Yes
11/09/2018		Translation of Japanese Patent Publication No. H11-355665	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2002 Public? Yes
12/18/2018		Authorized Joint Request to File Agreement as Business Confidential Information Pursuant to 35 U.S.C. 317(b)	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
12/18/2018		Petitioner's Authorized Unopposed Motion to Dismiss Proceeding with Prejudice	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 7 Public? Yes
12/26/2018		Termination Decision Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
01/30/2019		Petitioner's Request for Refund	Filed By: petitioner Document Type: PAPER Paper/Exhibit No:

Date	#	Proceeding Text	Details
			10 Public? Yes
03/05/2019		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes

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Document (1)

1. *IPR2016-00908, Olympus Corporation Vs. Maxell, Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2018-00908, Olympus Corporation Vs. Maxell, Ltd.

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 12/22/2020

Header

Case Number: IPR2018-00908
Date Filed: 06/20/2018
Date Full Case Retrieved: 12/22/2020
Status: Closed
Misc: (0) Unknown; Civil

Summary

Court Case Status: Terminated
Case Type: IPR: Inter partes review
Technical Center Number: 2600
Patent Application Number: 14264243
Patent Number: 9100604

Participants

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Petitioner
Maxell, Ltd.
PatentOwner

Attorneys

Proceedings

Date	#	Proceeding Text	Details
06/20/2018		Power of Attorney	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public?

Renee Preston

Date	#	Proceeding Text	Details
			Yes
06/20/2018		Ex. 1001 - US8339493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
06/20/2018		Ex. 1009 - US5990947 Okino	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1009 Public? Yes
06/20/2018		Ex. 1012 - File History to 12845266 - US 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
06/20/2018		Ex. 1015 - 5-16-cv-00178 Claim Construction Order	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015 Public? Yes
06/20/2018		Ex. 1002 - US8059177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
06/20/2018		Ex. 1003 - US9100604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
06/20/2018		Ex. 1005 - US5444482 Misawa	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
06/20/2018		Ex. 1006 - US6700607 Misawa	Filed By: petitioner

Date	#	Proceeding Text	Details
			Document Type: EXHIBITS Paper/Exhibit No: 1006 Public? Yes
06/20/2018		Ex. 1007 - US6292218 Parulski	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
06/20/2018		Ex. 1008 - US6529236 Watanabe	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
06/20/2018		Ex. 1010 - US6757013 Matsuzaka	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010 Public? Yes
06/20/2018		Ex. 1011 - JP-H3-1117985-A Egawa_English and Japanese	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1011 Public? Yes
06/20/2018		Ex. 1013 - File History to 10660710 - US 8,059,177	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes
06/20/2018		Ex. 1014 - File History to 14264243 - US 9,100,604	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
06/20/2018		Ex. 1016 - Excerpt of File History to 09520836 - US 6,765,616	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1016

Date	#	Proceeding Text	Details
			Public? Yes
06/20/2018		Ex. 1017 - As-filed specification of U.S. Patent Application No. 07997862	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1017 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration1 Appendices A-Z	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration3 Appendices AAA-MMM	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Ex. 1004 - Parulski Declaration2 Appendices AA-ZZ	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
06/20/2018		Petition for Inter Partes Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
07/09/2018		IPR2018-00908 Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
07/09/2018		IPR2018-00908 Mandatory Notices	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
07/17/2018		Notice of Accord Filing Date	Filed By:

Date	#	Proceeding Text	Details
			board Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
10/17/2018		Patent Owner's Preliminary Response	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
12/18/2018		Petitioner's Authorized Unopposed Motion to Dismiss Proceeding with Prejudice	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 7 Public? Yes
12/18/2018		Authorized Joint Request to File Agreement as Business Confidential Information Pursuant to 35 U.S.C. 317(b)	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
12/26/2018		Termination Decision Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
01/30/2019		Petitioner's Request for Refund	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes
03/04/2019		Notice of Refund	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes

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User Name: Renee Preston
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Job Number: 132757571

Document (1)

1. *5:19cv36 Maxell Ltd. V. Apple Inc*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

5:19cv36, Maxell Ltd. V. Apple Inc

US District Court Docket

US District Court for the Eastern District of Texas

(Texarkana)

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Header

Case Number: 5:19cv36
Date Filed: 03/15/2019
Assigned To: District Judge Robert W. Schroeder, III
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: None
Jurisdiction: Federal Question

Class Code: Open
Statute: 15:1126
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

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Proceedings

#	Date	Proceeding Text	Source
1	03/15/2019	COMPLAINT FOR PATENT INFRINGEMENT against Apple Inc (Filing fee $ 400 receipt number 0540-7181517.), filed by Maxell Ltd.. (Attachments: # 1 Exhibit Civil Cover Sheet, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, #	

#	Date	Proceeding Text	Source
		8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10)(Culbertson, Geoffrey) (Entered: 03/15/2019)	
2	03/15/2019	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Culbertson, Geoffrey) (Entered: 03/15/2019)	
3	03/15/2019	CORPORATE DISCLOSURE STATEMENT filed by Maxell Ltd. (Culbertson, Geoffrey) (Entered: 03/15/2019)	
	03/15/2019	Case Assigned to District Judge Robert W. Schroeder, III. (slo,) (Entered: 03/15/2019)	
	03/15/2019	In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice Regarding Consent to Proceed Before Magistrate Judge. (slo,) (Entered: 03/15/2019)	
4	03/15/2019	SUMMONS Issued as to Apple Inc. (slo,) (Entered: 03/15/2019)	
5	03/18/2019	NOTICE of Attorney Appearance by Jamie B Beaber on behalf of Maxell Ltd. (Beaber, Jamie) (Entered: 03/18/2019)	
6	03/18/2019	NOTICE of Attorney Appearance by James A Fussell, III on behalf of Maxell Ltd. (Fussell, James) (Entered: 03/18/2019)	
7	03/18/2019	NOTICE of Attorney Appearance by Kfir B Levy on behalf of Maxell Ltd. (Levy, Kfir) (Entered: 03/18/2019)	
8	03/18/2019	NOTICE of Attorney Appearance by Alan M Grimaldi on behalf of Maxell Ltd. (Grimaldi, Alan) (Entered: 03/18/2019)	
9	03/18/2019	NOTICE of Attorney Appearance by Tiffany A Miller on behalf of Maxell Ltd. (Miller, Tiffany) (Entered: 03/18/2019)	
10	03/18/2019	NOTICE of Attorney Appearance by Baldine Brunel Paul on behalf of Maxell Ltd. (Paul, Baldine) (Entered: 03/18/2019)	
11	03/18/2019	NOTICE of Attorney Appearance by Saqib Javaid Siddiqui on behalf of Maxell Ltd. (Siddiqui, Saqib) (Entered: 03/18/2019)	
12	03/18/2019	NOTICE of Attorney Appearance by Bryan Christopher Nese on behalf of Maxell Ltd. (Nese, Bryan) (Entered: 03/18/2019)	
13	03/18/2019	NOTICE of Attorney Appearance by Robert Gary Pluta on behalf of Maxell Ltd. (Pluta, Robert) (Entered: 03/18/2019)	
14	03/18/2019	NOTICE of Attorney Appearance by William Justin Barrow on behalf of Maxell Ltd. (Barrow, William) (Entered: 03/18/2019)	
15	03/18/2019	NOTICE of Attorney Appearance by Amanda Streff Bonner on behalf of Maxell Ltd. (Bonner, Amanda) (Entered: 03/18/2019)	
16	03/18/2019	DEFICIENT DOCUMENT. ATTORNEY MUST REFILE. PLEASE IGNORE. NOTICE of Attorney Appearance - Pro Hac Vice by Alison T Gelsleichter on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7183836. (Gelsleichter, Alison) Modified on 3/18/2019 (slo,). (Entered: 03/18/2019)	
	03/18/2019	NOTICE of Deficiency regarding the 16 NOTICE of Attorney Appearance - Pro Hac Vice submitted-- Document not submitted for approval prior to filing. Correction should be made by One Business Day. (slo,) (Entered: 03/18/2019)	
17	03/19/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Alison T Gelsleichter on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7185432. (Gelsleichter, Alison) (Entered: 03/19/2019)	
18	03/20/2019	NOTICE of Attorney Appearance by Kelly B Tidwell on behalf of Maxell Ltd. (Tidwell, Kelly) (Entered: 03/20/2019)	
19	03/21/2019	AFFIDAVIT of Service for Summons, Complaint and Demand for	

#	Date	Proceeding Text	Source
		Jury Trial served on Melissa Torres on 03/18/2019, filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 03/21/2019)	
20	04/03/2019	Defendant's Unopposed First Application for Extension of Time to Answer Complaint re Apple Inc.(Smith, Melissa) (Entered: 04/03/2019)	
	04/03/2019	Defendant's Unopposed FIRST Application for Extension of Time to Answer Complaint is GRANTED pursuant to Local Rule CV-12 for Apple Inc to 5/8/2019. 30 Days Granted for Deadline Extension.(slo,) (Entered: 04/03/2019)	
21	04/18/2019	Defendant's Unopposed Second Application for Extension of Time to Answer Complaint re Apple Inc.(Smith, Melissa) (Entered: 04/18/2019)	
	04/18/2019	Defendant's Unopposed SECOND Application for Extension of Time to Answer Complaint is GRANTED pursuant to Local Rule CV-12 for Apple Inc to 5/23/2019. 15 Days Granted for Deadline Extension.(slo,) (Entered: 04/18/2019)	
22	05/08/2019	NOTICE of Attorney Appearance by Anthony Gene Beasley on behalf of Apple Inc (Beasley, Anthony) (Entered: 05/08/2019)	
23	05/08/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Laura B. Gore on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7259549. (Gore, Laura) (Entered: 05/08/2019)	
24	05/08/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Bo Kyoung Moon on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7259554. (Moon, Bo) (Entered: 05/08/2019)	
25	05/09/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Luann Loraine Simmons on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7261347. (Simmons, Luann) (Entered: 05/09/2019)	
26	05/09/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Xin-Yi Zhou on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7261362. (Zhou, Xin-Yi) (Entered: 05/09/2019)	
27	05/23/2019	MOTION to Dismiss by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Simmons, Luann) (Entered: 05/23/2019)	
28	05/23/2019	CORPORATE DISCLOSURE STATEMENT filed by Apple Inc (Simmons, Luann) (Entered: 05/23/2019)	
29	05/24/2019	NOTICE of Readiness for Scheduling Conference by Maxell Ltd. (Beaber, Jamie) (Entered: 05/24/2019)	
30	05/31/2019	ORDER, NOTICE of Hearing:(Scheduling Conference set for 6/19/2019 11:30 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. The parties shall indicate in their joint motion submitting the proposed Docket Control Order whether they believe a scheduling conference is necessary. After review of the proposed Docket Control Order, Discovery Order and Protective Order, the Court may enter the orders and cancel the scheduling conference. The Court will notify the parties of any cancellation. Signed by District Judge Robert W. Schroeder, III on 05/31/19. (lfs,) (Entered: 05/31/2019)	
31	06/06/2019	RESPONSE in Opposition re 27 MOTION to Dismiss filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/06/2019)	
32	06/11/2019	Joint MOTION for Extension of Time to File Protective Order by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 06/11/2019)	
33	06/12/2019	ORDER granting 32 Motion for Extension of Time to File Protective Order. It is therefore ORDERED that the deadline for the parties to file a proposed protective order is extended to June 17, 2019. Signed by District Judge Robert W. Schroeder, III on 06/12/19. (lfs,) (Entered: 06/12/2019)	
34	06/12/2019	Joint MOTION Seeking Entry of Docket Control Order by Maxell	

#	Date	Proceeding Text	Source
		Ltd.. (Attachments: # 1 Docket Control Order)(Beaber, Jamie) (Entered: 06/12/2019)	
35	06/12/2019	Joint MOTION Seeking Entry of Discovery Order by Maxell Ltd.. (Attachments: # 1 Discovery Order)(Beaber, Jamie) (Entered: 06/12/2019)	
36	06/12/2019	Joint MOTION Seeking Entry of Order Focusing Patent Claims and Prior Art to Reduce Costs by Maxell Ltd.. (Attachments: # 1 Order Focusing Patent Claims and Prior Art to Reduce Costs)(Beaber, Jamie) (Entered: 06/12/2019)	
37	06/13/2019	REPLY to Response to Motion re 27 MOTION to Dismiss filed by Apple Inc. (Smith, Melissa) (Entered: 06/13/2019)	
38	06/17/2019	Joint MOTION SEEKING ENTRY OF PROTECTIVE ORDER by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 06/17/2019)	
39	06/18/2019	SUR-REPLY to Reply to Response to Motion re 27 MOTION to Dismiss filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 06/18/2019)	
40	06/18/2019	NOTICE of Attorney Appearance by Bobby Lamb on behalf of Apple Inc (Lamb, Bobby) (Entered: 06/18/2019)	
	06/19/2019	Scheduling Conference held on 6/19/2019 before District Judge Robert W. Schroeder III. Counsel in attendance were Geoff Culbertson, Tripp Fussell, Bobby Lamb, Luann Simmons, Tony Beasley, and Andrew Stein. (bas) (Entered: 06/19/2019)	
41	06/24/2019	NOTICE by Apple Inc JOINT NOTICE REGARDING MEDIATION (Smith, Melissa) (Entered: 06/24/2019)	
42	06/25/2019	DISCOVERY ORDER. Signed by District Judge Robert W. Schroeder, III on 6/25/2019. (slo,) (Entered: 06/25/2019)	
43	06/26/2019	Joint MOTION for Protective Order by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 06/26/2019)	
44	07/02/2019	ORDER granting 36 Motion for entry of Order Focusing Patent Claims and Prior Art to Reduce Costs. Signed by District Judge Robert W. Schroeder, III on 07/02/19. (lfs,) (Entered: 07/02/2019)	
45	07/02/2019	AGREED PROTECTIVE ORDER REGARDING THE DISCLOSURE AND USE OF DISCOVERY MATERIALS. Signed by District Judge Robert W. Schroeder, III on 07/02/19. (lfs,) (Entered: 07/02/2019)	
46	07/09/2019	DOCKET CONTROL/SCHEDULING ORDER:(Pretrial Conference set for 10/6/2020 10:00 AM before District Judge Robert W. Schroeder III., Amended Pleadings due by 5/26/2020., Jury Selection set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Markman Hearing set for 1/8/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Dispositive Motion Hearing set for 9/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Proposed Pretrial Order due by 9/22/2020.), Motions terminated: 34 Joint MOTION Seeking Entry of Docket Control Order filed by Maxell Ltd. Signed by District Judge Robert W. Schroeder, III on 07/09/19. (lfs,) (Entered: 07/09/2019)	
47	07/11/2019	NOTICE of Discovery Disclosure by Apple Inc Regarding Initial and Additional Disclosures (Smith, Melissa) (Entered: 07/11/2019)	
48	07/11/2019	NOTICE of Discovery Disclosure by Maxell Ltd. (Culbertson, Geoffrey) (Entered: 07/11/2019)	
49	07/19/2019	ORDER Setting Hearing on Motion 27 MOTION to Dismiss : Motion Hearing set for 8/27/2019 02:00 PM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Signed	

#	Date	Proceeding Text	Source
		by District Judge Robert W. Schroeder, III on 07/19/19. (lfs,) (Entered: 07/19/2019)	
50	07/26/2019	ORDER resetting Hearing on Motion 27 MOTION to Dismiss : Motion Hearing reset for 8/28/2019 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.. Signed by District Judge Robert W. Schroeder, III on 07/26/19. (lfs,) (Entered: 07/26/2019)	
51	07/31/2019	Unopposed MOTION to Seal Document MOTION TO TRANSFER VENUE PURSUANT TO 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 07/31/2019)	
52	07/31/2019	Opposed SEALED PATENT MOTION TO TRANSFER VENUE PURSUANT TO 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Affidavit Jaynes, # 2 Affidavit Simmons, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H, # 11 Exhibit I, # 12 Exhibit J, # 13 Exhibit K, # 14 Exhibit L, # 15 Exhibit M, # 16 Exhibit N, # 17 Exhibit O, # 18 Exhibit P, # 19 Exhibit Q, # 20 Text of Proposed Order)(Smith, Melissa) (Entered: 07/31/2019)	
53	08/02/2019	REDACTION to 52 Opposed SEALED PATENT MOTION TO TRANSFER VENUE PURSUANT TO 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Affidavit Jaynes, # 2 Affidavit Simmons, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 08/02/2019)	
54	08/02/2019	Additional Attachments to Main Document: 53 Redacted Document,,.. (Attachments: # 1 Exhibit J)(Smith, Melissa) (Entered: 08/02/2019)	
55	08/02/2019	ORDER granting 51 Motion to Seal Document. Signed by District Judge Robert W. Schroeder, III on 08/02/19. (lfs,) (Entered: 08/02/2019)	
56	08/05/2019	Opposed MOTION to Compel Defendant Apple Inc. to Produce Timely Discovery by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/05/2019)	
57	08/09/2019	Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Affidavit Jaynes, # 2 Affidavit Simmons, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H, # 11 Exhibit I, # 12 Exhibit J, # 13 Exhibit K, # 14 Exhibit L, # 15 Exhibit M, # 16 Exhibit N, # 17 Exhibit O, # 18 Exhibit P, # 19 Exhibit Q, # 20 Exhibit R, # 21 Exhibit S, # 22 Exhibit T, # 23 Text of Proposed Order)(Smith, Melissa) (Entered: 08/09/2019)	
58	08/13/2019	REDACTION to 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Affidavit Jaynes, # 2 Affidavit Simmons, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G - sealed, # 10 Exhibit H, # 11 Exhibit I, # 12 Exhibit J, # 13 Exhibit K, # 14 Exhibit L, # 15 Exhibit M, # 16 Exhibit N, # 17 Exhibit O, # 18 Exhibit P, # 19 Exhibit Q - sealed, # 20 Exhibit R - sealed, # 21 Exhibit S - sealed, # 22 Exhibit T - sealed, # 23 Text of Proposed Order)(Smith, Melissa) (Entered: 08/13/2019)	
59	08/15/2019	NOTICE of Discovery Disclosure by Apple Inc Regarding PR 3-3 and 3-4 (Smith, Melissa) (Entered: 08/15/2019)	
60	08/16/2019	Joint MOTION for Leave to File Excess Pages Related to Apple	

#	Date	Proceeding Text	Source
		Inc.'s Amended Motion to Transfer by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 08/16/2019)	
61	08/16/2019	NOTICE of Attorney Appearance - Pro Hac Vice by Clark S Bakewell on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7396671. (Bakewell, Clark) (Entered: 08/16/2019)	
	08/19/2019	ORDER. It is hereby ORDERED that Plaintiff Maxell Ltd. shall file an opposition brief to Apple Inc.s Amended Motion to Transfer Venue (Docket No. 57) of no more than 25 pages, exclusive of any exhibits, and Apple Inc. shall file a reply brief of no more than 10 pages, exclusive of any exhibits. It is further ORDERED that, in light of the Amended Motion to Transfer Venue (Docket No. 57), Apple Inc.s Motion to Transfer Venue (Docket No. 52) is DENIED AS MOOT. Signed by District Judge Robert W. Schroeder, III on 08/19/19. (lfs,) (Entered: 08/19/2019)	
62	08/19/2019	RESPONSE in Opposition re 56 Opposed MOTION to Compel Defendant Apple Inc. to Produce Timely Discovery filed by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Smith, Melissa) (Additional attachment(s) added on 8/20/2019: # 3 Text of Proposed Order) (lfs,). (Entered: 08/19/2019)	
63	08/19/2019	***FILED IN ERROR BY ATTORNEY. PLEASE IGNORE.***Additional Attachments to Main Document: 62 Response in Opposition to Motion.. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) Modified on 8/20/2019 (lfs,). (Entered: 08/19/2019)	
64	08/20/2019	NOTICE by Maxell Ltd. Notice of Readiness for Hearing on Plaintiff Maxell, LTD's Motion to Compel (Culbertson, Geoffrey) (Entered: 08/20/2019)	
65	08/23/2019	SEALED RESPONSE to Motion re 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Exhibit 20, # 22 Exhibit 21, # 23 Exhibit 22, # 24 Exhibit 23, # 25 Exhibit 24, # 26 Exhibit 25, # 27 Exhibit 26, # 28 Exhibit 27, # 29 Exhibit 28, # 30 Exhibit 29, # 31 Exhibit 30, # 32 Exhibit 31, # 33 Exhibit 32, # 34 Exhibit 33, # 35 Exhibit 34, # 36 Exhibit 35, # 37 Exhibit 36, # 38 Exhibit 37, # 39 Exhibit 38, # 40 Exhibit 39, # 41 Exhibit 40, # 42 Exhibit 41, # 43 Exhibit 42, # 44 Exhibit 43, # 45 Exhibit 44, # 46 Exhibit 45, # 47 Exhibit 46, # 48 Exhibit 47, # 49 Exhibit 48, # 50 Exhibit 49, # 51 Declaration of Kenji Nakamura, # 52 Declaration of Alan Loudermilk, # 53 Declaration of Geoff Culbertson, # 54 Appendix, # 55 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/23/2019)	
66	08/27/2019	REDACTION to 65 Sealed Response to Motion,,,,, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Exhibit 20, # 22 Exhibit 21, # 23 Exhibit 22, # 24 Exhibit 23, # 25 Exhibit 24, # 26 Exhibit 25, # 27 Exhibit 26, # 28 Exhibit 27, # 29 Exhibit 28, # 30 Exhibit 29, # 31 Exhibit 30, # 32 Exhibit 31, # 33 Exhibit 32, # 34 Exhibit 33, # 35 Exhibit 34, # 36 Exhibit 35, # 37 Exhibit 36, # 38 Exhibit 37, # 39 Exhibit 38, # 40 Exhibit 39, # 41 Exhibit 40, # 42 Exhibit 41, # 43 Exhibit 42, # 44 Exhibit 43, # 45 Exhibit 44, # 46 Exhibit 45, # 47 Exhibit 46, # 48	

#	Date	Proceeding Text	Source
		Exhibit 47, # 49 Exhibit 48, # 50 Exhibit 49, # 51 Declaration of Kenji Nakamura, # 52 Declaration of Alan Loudermilk, # 53 Declaration of Geoff Culbertson, # 54 Appendix, # 55 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/27/2019)	
67	08/28/2019	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 8/28/2019 re 27 MOTION to Dismiss filed by Apple Inc. (Court Reporter Ed Reed) (Attachments: # 1 Attorney Sign in Sheet) (bas) (Entered: 08/28/2019)	
68	08/28/2019	NOTICE by Apple Inc Hearing Presentation (Attachments: # 1 Presentation Slides)(Smith, Melissa) (Entered: 08/28/2019)	
69	08/30/2019	SEALED PATENT REPLY to Response to PATENT Motion re 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit U, # 3 Exhibit V, # 4 Exhibit W, # 5 Exhibit X, # 6 Exhibit Y, # 7 Exhibit Z, # 8 Exhibit AA, # 9 Exhibit BB, # 10 Exhibit CC, # 11 Exhibit DD, # 12 Exhibit EE, # 13 Exhibit FF)(Smith, Melissa) (Entered: 08/30/2019)	
70	08/30/2019	SEALED ADDITIONAL ATTACHMENTS to Main Document: 69 Sealed PATENT Reply to Response to PATENT Motion,. (Attachments: # 1 Exhibit GG)(Smith, Melissa) (Entered: 08/30/2019)	
71	09/04/2019	ORDER Setting Hearing on Motions. Plaintiffs Motion to Compel Defendant Apple to Produce Timely Discovery (Docket No. 56) and Plaintiffs Amended Motion to Transfer Venue (Docket No. 57) are hereby SET for hearing at 10 a.m. on September 17, 2019 in Texarkana, Texas in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 09/04/19. (lfs,) (Entered: 09/04/2019)	
72	09/04/2019	REDACTION to 69 Sealed PATENT Reply to Response to PATENT Motion, 70 Sealed Additional Attachments to Main Document by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit U, # 3 Exhibit V, # 4 Exhibit W, # 5 Exhibit X, # 6 Exhibit Y, # 7 Exhibit Z, # 8 Exhibit AA, # 9 Exhibit BB, # 10 Exhibit CC, # 11 Exhibit DD, # 12 Exhibit EE, # 13 Exhibit FF, # 14 Exhibit GG)(Smith, Melissa) (Entered: 09/04/2019)	
73	09/05/2019	NOTICE of Discovery Disclosure by Apple Inc Regarding PR 4-1 Disclosures (Smith, Melissa) (Entered: 09/05/2019)	
74	09/05/2019	Joint MOTION SEEKING ENTRY OF STIPULATED SUPPLEMENTAL PROTECTIVE ORDER BETWEEN NON PARTY QUALCOMM INCORPORATED, PLAINTIFF, AND DEFENDANT by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 09/05/2019)	
75	09/05/2019	NOTICE of Discovery Disclosure by Maxell Ltd. Regarding PR 4-1 Disclosures (Culbertson, Geoffrey) (Entered: 09/05/2019)	
76	09/06/2019	SEALED SUR-REPLY to Reply to Response to Motion re 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 50)(Beaber, Jamie) (Entered: 09/06/2019)	
77	09/10/2019	AGREED SUPPLEMENTAL PROTECTIVE ORDER. Signed by District Judge Robert W. Schroeder, III on 09/10/19. (lfs.) (Entered: 09/10/2019)	
78	09/10/2019	NOTICE by Maxell Ltd. re 56 Opposed MOTION to Compel Defendant Apple Inc. to Produce Timely Discovery (Joint Report Regarding Maxell's Motion to Compel) (Beaber, Jamie) (Entered: 09/10/2019)	
79	09/17/2019	SEALED NOTICE OF FILING HEARING PRESENTATION. (Attachments: # 1 Presentation Slides)(Smith, Melissa) (Entered:	

#	Date	Proceeding Text	Source
		09/17/2019)	
80	09/18/2019	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 9/17/2019 re 56 Opposed MOTION to Compel Defendant Apple Inc. to Produce Timely Discovery filed by Maxell Ltd., 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) filed by Apple Inc. (Court Reporter Anna Lafrenz) (SMC) (Entered: 09/18/2019)	
81	09/18/2019	NOTICE by Maxell Ltd. Notice of Filing Hearing Presentation (Attachments: # 1 Exhibit GPC Hearing Presentation, # 2 Exhibit KL Hearing Presentation)(Culbertson, Geoffrey) (Entered: 09/18/2019)	
82	09/18/2019	SEALED ADDITIONAL ATTACHMENTS to Main Document: 81 Notice of Filing Hearing Presentation. (Attachments: # 1 Exhibit JF Hearing Presentation)(Culbertson, Geoffrey) (Entered: 09/18/2019)	
83	09/19/2019	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on Motion Hearing - 9/17/2019 before Judge Robert W. Schroeder, III. (Culbertson, Geoffrey) (To be transcribed by Anna Lafrenz. Forwarded to Anna Lafrenz on 9/19/19) (ljw,). (Entered: 09/19/2019)	
84	09/19/2019	PAPER TRANSCRIPT REQUEST by Apple Inc for proceedings held on September 17, 2019 Motion Hearing before Judge Robert W. Schroeder, III.. (Smith, Melissa) (Entered: 09/19/2019)	
85	09/19/2019	REDACTION to 79 Sealed Patent Document by Apple Inc. (Attachments: # 1 Redacted Presentation Slides)(Smith, Melissa) (Entered: 09/19/2019)	
86	09/26/2019	NOTICE of Discovery Disclosure by Apple Inc Regarding Privilege Log (Smith, Melissa) (Entered: 09/26/2019)	
87	09/26/2019	NOTICE of Discovery Disclosure by Apple Inc Regarding P.R. 4-2 Disclosures (Smith, Melissa) (Entered: 09/26/2019)	
88	09/26/2019	***FILED IN ERROR, PLEASE IGNORE***,/b>NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 09/17/19 before Judge Robert William Schroeder, III. Court Reporter/Transcriber: Anna Renken Lafrenz,Telephone number: (903) 794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 10/17/2019. Release of Transcript Restriction set for 12/25/2019. (Lafrenz, Anna) Modified on 10/16/2019 (lfs,). (Entered: 09/26/2019)	
89	09/26/2019	***FILED IN ERROR. PLEASE IGNORE***Sealed Transcript. (Lafrenz, Anna) Modified on 10/16/2019 (lfs,). (Entered: 09/26/2019)	
90	09/26/2019	***FILED IN ERROR. PLEASE IGNORE***NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 09/17/19 before Judge Robert William Schroeder, III. Court Reporter/Transcriber: Anna Renken Lafrenz,Telephone number: (903) 794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy	

#	Date	Proceeding Text	Source
		is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 10/17/2019. Release of Transcript Restriction set for 12/25/2019. (Lafrenz, Anna) Modified on 10/16/2019 (lfs,). (Entered: 09/26/2019)	
91	09/26/2019	NOTICE of Discovery Disclosure by Maxell Ltd. Notice of Compliance Privilege Log (Culbertson, Geoffrey) (Entered: 09/26/2019)	
92	09/26/2019	NOTICE of Discovery Disclosure by Maxell Ltd. Notice of Compliance Rule 4-2 (Culbertson, Geoffrey) (Entered: 09/26/2019)	
93	10/02/2019	NOTICE of Intent to Request Redaction by Melissa Richards Smith re 88 Transcript,,,. (Smith, Melissa) (Entered: 10/02/2019)	
94	10/02/2019	NOTICE of Intent to Request Redaction by Melissa Richards Smith re 90 Transcript,,,. (Smith, Melissa) (Entered: 10/02/2019)	
95	10/02/2019	NOTICE of Intent to Request Redaction by Jamie B Beaber re 88 Transcript,,,. (Beaber, Jamie) (Entered: 10/02/2019)	
96	10/07/2019	Opposed MOTION for Leave to File Supplemental Infringement Contentions to Add Newly Released Products by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller in Support, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/07/2019)	
97	10/07/2019	Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 10/07/2019)	
98	10/10/2019	REDACTION to 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) by Apple Inc. (Smith, Melissa) (Entered: 10/10/2019)	
	10/16/2019	***FILED IN ERROR. Documents # 88, 89, and 90, transcripts. PLEASE IGNORE. Transcripts will be refiled.*** (lfs,) (Entered: 10/16/2019)	
99	10/16/2019	JOINT CLAIM CONSTRUCTION BRIEF AND PREHEARING STATEMENT filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 10/16/2019)	
101	10/17/2019	Sealed Transcript. (Lafrenz, Anna) (Entered: 10/17/2019)	
102	10/17/2019	Unopposed SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/17/2019)	
103	10/18/2019	Unopposed SEALED MOTION for Additional Redactions or Sealing (Corrected) by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/18/2019)	
104	10/21/2019	REDACTION to 102 Unopposed SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/21/2019)	
105	10/22/2019	NOTICE by Apple Inc re 96 Opposed MOTION for Leave to File Supplemental Infringement Contentions to Add Newly Released Products STATEMENT OF NON-OPPOSITION (Smith, Melissa) (Entered: 10/22/2019)	
106	10/22/2019	REDACTION to 103 Unopposed SEALED MOTION for Additional Redactions or Sealing (Corrected) by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/22/2019)	

#	Date	Proceeding Text	Source
107	10/22/2019	RESPONSE in Opposition re 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/22/2019)	
108	10/22/2019	Joint MOTION for Protective Order (Joint Motion Seeking Entry of Stipulated Supplemental Protective Order for Intel Confidential Information) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/22/2019)	
109	10/23/2019	ORDER granting in part and denying in part 27 Motion to Dismiss. It is accordingly ORDERED that Defendant Apples motions to dismiss Maxells induced infringement claims and the claims for pre-suit indirect and willful infringement are DENIED. It is further ORDERED that Defendant Apples motion to dismiss Maxells claims for pre-suit indirect and willful infringement of the 586 patent is DISMISSED WITHOUT PREJUDICE. Signed by District Judge Robert W. Schroeder, III on 10/23/19. (lfs,) (Entered: 10/23/2019)	
110	10/23/2019	NOTICE of Intent to Request Redaction by Melissa Richards Smith re 100 Transcript,,,. (Smith, Melissa) (Entered: 10/23/2019)	
111	10/23/2019	AMENDED COMPLAINT for Patent Infringement against Apple Inc, filed by Maxell Ltd.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10)(Beaber, Jamie) (Entered: 10/23/2019)	
112	10/28/2019	JOINT SUPPLEMENTAL PROTECTIVE ORDER. Signed by Judge Schroeder on 10/28/19.(lfs,) (Entered: 10/28/2019)	
113	10/30/2019	SEALED PATENT REPLY to Response to PATENT Motion re 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A)(Smith, Melissa) (Entered: 10/30/2019)	
114	11/01/2019	REDACTION to 113 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A)(Smith, Melissa) (Entered: 11/01/2019)	
115	11/04/2019	Unopposed SEALED PATENT MOTION TO REDACT PORTIONS OF THE SEPTEMBER 17, 2019 MOTIONS HEARING TRANSCRIPT by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/04/2019)	
116	11/05/2019	Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER TO PREVENT DEPOSITION OF IN-HOUSE LITIGATION COUNSEL by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/05/2019)	
117	11/06/2019	SEALED SUR-REPLY to Reply to Response to Motion re 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A to Miller Declaration)(Beaber, Jamie) (Entered: 11/06/2019)	
118	11/06/2019	ANSWER to 111 Amended Complaint, and Affirmative Defenses by Apple Inc.(Smith, Melissa) (Entered: 11/06/2019)	
119	11/07/2019	REDACTION to 116 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER TO PREVENT DEPOSITION OF IN-HOUSE LITIGATION COUNSEL by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/07/2019)	
120	11/08/2019	REDACTION to 117 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A to Miller Declaration)(Beaber, Jamie)	

#	Date	Proceeding Text	Source
		(Entered: 11/08/2019)	
121	11/11/2019	SEALED RESPONSE to Motion re 116 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER TO PREVENT DEPOSITION OF IN-HOUSE LITIGATION COUNSEL filed by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/11/2019)	
122	11/12/2019	NOTICE by Apple Inc re 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) NOTICE OF RIPENESS AND REQUEST FOR HEARING (Smith, Melissa) (Entered: 11/12/2019)	
123	11/12/2019	Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/12/2019)	
124	11/13/2019	ORDER denying 115 Sealed Patent Motion to Redact Portions of the September 17, 2019 Motions Hearing Transcript. Defendant may refile an amended motion within three (3) days of this Order. Signed by District Judge Robert W. Schroeder, III on 11/13/2019. (slo,) (Entered: 11/13/2019)	
125	11/13/2019	REDACTION to 121 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/13/2019)	
126	11/13/2019	ORDER granting in part and denying in part 56 Motion to Compel. It is ORDERED that Maxells motion to compel (Docket No. 56) is GRANTED as to Interrogatory Nos. 4, 5, 6, 7 and 9. It is further ORDERED that Maxells motion to compel is GRANTED-IN-PART and DENIED-IN-PART as to Interrogatory Nos. 3 and 8. Finally, it is ORDERED that Maxells motion to compel is DENIED with respect to Interrogatory No. 2 and Maxells motion to compel document production. Signed by District Judge Robert W. Schroeder, III on 11/13/2019. (slo,) (Entered: 11/13/2019)	
127	11/14/2019	NOTICE of Attorney Appearance by Bethany M. Stevens on behalf of Apple Inc (Stevens, Bethany) (Entered: 11/14/2019)	
128	11/14/2019	NOTICE of Attorney Appearance by Hannah Lynn Cannom on behalf of Apple Inc (Cannom, Hannah) (Entered: 11/14/2019)	
129	11/14/2019	REDACTION to 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/14/2019)	
130	11/14/2019	MOTION for Leave to Supplement Invalidity Contentions by Apple Inc. (Attachments: # 1 Affidavit Gibson, # 2 Affidavit Simmons, # 3 Exhibit A, # 4 Exhibit B, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 11/14/2019)	
131	11/16/2019	Unopposed MOTION to Redact the September 17, 2019 Motions Hearing Transcript by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/16/2019)	
132	11/18/2019	NOTICE by Maxell Ltd. re 116 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER TO PREVENT DEPOSITION OF IN-HOUSE LITIGATION COUNSEL (Notice of Withdrawal of Deposition Notice on Andrew Stein) (Beaber, Jamie) (Entered: 11/18/2019)	
133	11/18/2019	NOTICE by Maxell Ltd. (Joint Notice of Proposed Technical Advisors) (Beaber, Jamie) (Entered: 11/18/2019)	

#	Date	Proceeding Text	Source
134	11/18/2019	NOTICE by Apple Inc Regarding Technical Tutorial (Smith, Melissa) (Entered: 11/18/2019)	
135	11/18/2019	NOTICE by Maxell Ltd. of Compliance Regarding Technology Tutorial (Beaber, Jamie) (Entered: 11/18/2019)	
136	11/18/2019	OPENING CLAIM CONSTRUCTION BRIEF filed by Maxell Ltd.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14)(Beaber, Jamie) (Entered: 11/18/2019)	
137	11/19/2019	NOTICE by Apple Inc of Compliance regarding Preliminary Election of Prior Art (Smith, Melissa) (Entered: 11/19/2019)	
138	11/19/2019	ORDER granting 96 Motion for Leave to Amend Infringement Contentions. Signed by District Judge Robert W. Schroeder, III on 11/19/2019. (slo,) (Entered: 11/19/2019)	
139	11/19/2019	ORDER GRANTING 131 Unopposed MOTION to Redact the September 17, 2019 Motions Hearing Transcript filed by Apple Inc; GRANTING 103 Unopposed SEALED MOTION for Additional Redactions or Sealing (Corrected) filed by Maxell Ltd. It is hereby ORDERED that Plaintiffs Motion to Redact the September 17, 2019 Motions Hearing Transcript (Docket No. 131) is GRANTED, and the requested unsealed portions of the transcript will be placed under seal. It is further ORDERED that Defendants Motion for Additional Redactions or Sealing (Docket No. 103) is GRANTED, and the requested unsealed portions of the transcript will be placed under seal. The September 17, 2019 hearing transcript (Docket No. 100) shall be made available in the ECF record and on PACER after additional sealing consistent with the Order. Signed by District Judge Robert W. Schroeder, III on 11/19/2019. (slo,) (Entered: 11/19/2019)	
140	11/20/2019	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 09/17/19 before Judge Robert W. Schroeder III. Court Reporter/Transcriber: Anna Renken Lafrenz,Telephone number: (903) 794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 12/11/2019. Release of Transcript Restriction set for 2/18/2020. (Lafrenz, Anna) (Entered: 11/20/2019)	
141	11/25/2019	NOTICE of Attorney Appearance by Jeffrey Todd Quilici on behalf of Apple Inc (Quilici, Jeffrey) (Entered: 11/25/2019)	
142	11/25/2019	NOTICE by Apple Inc re 132 Notice (Other), 116 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER TO PREVENT DEPOSITION OF IN-HOUSE LITIGATION COUNSEL (Smith, Melissa) (Entered: 11/25/2019)	
143	11/27/2019	Unopposed MOTION for Leave to File Excess Pages to Opposition to Apple Inc.'s Mtn to Compel Infringement Contentions Compliant with Patent Rule 3-1(g) or, In the Alternative, to Preclude Maxell's Reliance on Source Code for Infringement by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 11/27/2019)	
144	11/27/2019	FILED IN ERROR, PER ATTORNEY. PLEASE IGNORE. SEALED RESPONSE to Motion re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions	

#	Date	Proceeding Text	Source
		Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement filed by Maxell Ltd.. (Attachments: # 1 Exhibit A- Declaration of Saqib J. Siddiqui, # 2 Declaration of Alison T. Gelsleichter, # 3 Exhibit B)(Culbertson, Geoffrey) (Additional attachment(s) added on 11/27/2019: # 4 Text of Proposed Order) (slo,). Modified on 11/27/2019 (slo,). (Entered: 11/27/2019)	
	11/27/2019	***FILED IN ERROR, Per Attorney. Document # 144, Sealed Response. Attorney to refile. PLEASE IGNORE.*** (slo,) (Entered: 11/27/2019)	
145	11/27/2019	SEALED RESPONSE In Opposition to Motion re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement filed by Maxell Ltd.. (Attachments: # 1 Exhibit A- Declaration of Saqib J. Siddiqui, # 2 Declaration of Alison T. Gelsleichter, # 3 Exhibit B, # 4 Text of Proposed Order Order)(Culbertson, Geoffrey) (Entered: 11/27/2019)	
146	11/27/2019	MOTION for Issuance of Letters of Request for International Judicial Assistance by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 11/27/2019)	
147	11/27/2019	NOTICE by Apple Inc re 126 Order on Motion to Compel,, (Smith, Melissa) (Entered: 11/27/2019)	
148	11/29/2019	RESPONSE in Opposition re 130 MOTION for Leave to Supplement Invalidity Contentions filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Text of Proposed Order Order)(Culbertson, Geoffrey) (Entered: 11/29/2019)	
149	12/02/2019	REDACTION to 145 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Exhibit A- Declaration of Saqib J. Siddiqui, # 2 Declaration of Alison T. Gelsleichter, # 3 Exhibit B, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/02/2019)	
150	12/02/2019	ORDER DENYING AS MOOT 116 Sealed Patent Motion. Signed by District Judge Robert W. Schroeder, III on 12/02/19. (lfs,) (Entered: 12/02/2019)	
151	12/02/2019	ORDER Setting Hearing on Motion 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement and 130 MOTION for Leave to Supplement Invalidity Contentions : Motion Hearing set for 1/8/2020 10:00 AM immediately following the previously scheduled Markman hearing in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 12/02/19. (lfs,) (Entered: 12/02/2019)	
152	12/02/2019	ORDER granting 143 Motion for Leave to File Excess Pages. It is thereforeORDERED that Plaintiff may exceed the page limit for attachments to responses to discovery motions set forth in the 2016 Standing Order Regarding Meet and Confer Obligations Relating to Discovery Disputes. Signed by District Judge Robert W. Schroeder, III on 12/02/19. (lfs,) (Entered: 12/02/2019)	
153	12/04/2019	Unopposed MOTION for Leave to File Reply in Support of its Motion to Compel Infringement Contentions Compliant With Patent Rule 3-1(g) or, in the Alternative, to Preclude Maxells Reliance on Source Code for Infringement by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 12/04/2019)	
154	12/04/2019	REPLY to Response to Motion re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions	

#	Date	Proceeding Text	Source
		Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement filed by Apple Inc. (Smith, Melissa) (Entered: 12/04/2019)	
155	12/04/2019	ORDER APPOINTING TECHNICAL ADVISOR. The Court APPOINTS Shane A. Nelson as technical advisor with his costs to be assessed equally between Plaintiff and Defendant and timely paid as billed. The parties are ORDERED to send courtesy copies of claim construction briefs, exhibits, and technology tutorials no later than one business day after the date of this Order or as they become available: (1) in PDF form to shane@parklegal.com; and (2) in paper form, double-sided, either spiral-bound or in a 3-ring binder, with tabbed exhibits to: Shane A. Nelson, Park, Vaughan, Fleming & Dowler LLP, 5847 San Felipe, Suite 1700, Houston, TX 77057. If the document was filed with the Court, the copy must include the CM/ECF header. Signed by District Judge Robert W. Schroeder, III on 12/04/19. (lfs,) (Entered: 12/04/2019)	
156	12/04/2019	SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Text of Proposed Order)(Smith, Melissa) (Entered: 12/04/2019)	
157	12/06/2019	ORDER granting 146 Motion for Issuance of Letters of Request for International Judicial Assistance. Signed by District Judge Robert W. Schroeder, III on 12/06/19. (lfs,) (Entered: 12/06/2019)	
158	12/06/2019	ORDER granting 153 Motion for Leave to File Reply to Maxell's opposition to Apple's Motion to Compel. Signed by District Judge Robert W. Schroeder, III on 12/06/19. (lfs,) (Entered: 12/06/2019)	
159	12/06/2019	REPLY to Response to Motion re 130 MOTION for Leave to Supplement Invalidity Contentions filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 1)(Smith, Melissa) (Entered: 12/06/2019)	
160	12/06/2019	REDACTION to 156 SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5)(Smith, Melissa) (Entered: 12/06/2019)	
161	12/09/2019	RESPONSIVE CLAIM CONSTRUCTION BRIEF filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Exhibit R, # 20 Appendix 1)(Smith, Melissa) (Entered: 12/09/2019)	
162	12/13/2019	SUR-REPLY to Reply to Response to Motion re 130 MOTION for Leave to Supplement Invalidity Contentions filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller)(Beaber, Jamie) (Entered: 12/13/2019)	
163	12/16/2019	NOTICE by Maxell Ltd. re 46 Scheduling Order JOINT NOTICE REGARDING ESTIMATED TIME FOR MARKMAN HEARING (Beaber, Jamie) (Entered: 12/16/2019)	
164	12/16/2019	FILED IN ERROR, PER ATTORNEY. PLEASE IGNORE. REPLY CLAIM CONSTRUCTION BRIEF filed by Maxell Ltd.. (Attachments: # 1 Exhibit 15, # 2 Exhibit 16, # 3 Exhibit 17, # 4 Exhibit 18, # 5 Exhibit 19, # 6 Exhibit 20, # 7 Exhibit 21, # 8 Appendix A)(Beaber, Jamie) Modified on 12/18/2019 (slo,). (Entered: 12/16/2019)	
165	12/17/2019	REPLY CLAIM CONSTRUCTION BRIEF (Correction of Dkt. Entry 164) filed by Maxell Ltd.. (Attachments: # 1 Exhibit 15, # 2 Exhibit 16, # 3 Exhibit 17, # 4 Exhibit 18, # 5 Appendix A)(Beaber, Jamie) (Entered: 12/17/2019)	
	12/18/2019	***FILED IN ERROR, PER ATTORNEY-- Document # 164,	

#	Date	Proceeding Text	Source
		REPLY CLAIM CONSTRUCTION BRIEF. PLEASE IGNORE. Document has been refiled-See Document #165. *** (slo,) (Entered: 12/18/2019)	
166	12/19/2019	SEALED RESPONSE to Motion re 156 SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/19/2019)	
167	12/20/2019	P.R. 4-5(d) Joint Claim Construction Chart by Maxell Ltd.. (Culbertson, Geoffrey) (Entered: 12/20/2019)	
168	12/20/2019	ORDER Setting Hearing on Motion 156 SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS : Motion Hearing set for 1/8/2020 immediately following previously scheduled Markman hearing in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 12/20/2019. (slo,) (Entered: 12/20/2019)	
169	12/20/2019	NOTICE by Apple Inc re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement, 156 SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS (Smith, Melissa) (Entered: 12/20/2019)	
170	12/23/2019	REDACTION to 166 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/23/2019)	
172	01/06/2020	ORDER re 171 Sealed Order. Court plans to file an unsealed version no later than January 20, 2019. Following a meet and confer, the parties may file a joint sealed motion to redact limited portions of the order no later than January 15, 2020. Signed by District Judge Robert W. Schroeder, III on 1/6/2020. (slo,) (Entered: 01/06/2020)	
173	01/08/2020	USCA Federal Circuit ORDER granting Apple Inc's motion to voluntarily dismiss its petition for writ of mandamus; petition is dismissed; all pending motions are denied as moot. (slo,) (Entered: 01/08/2020)	
174	01/08/2020	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Markman Hearing held on 1/8/2020, Motion Hearing held on 1/8/2020 re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement filed by Apple Inc, 130 MOTION for Leave to Supplement Invalidity Contentions filed by Apple Inc, and 156 SEALED PATENT MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS filed by Apple Inc. (Court Reporter Anna Lafrenz) (Attachments: # 1 Attorney Sign In Sheet) (bas) (Entered: 01/08/2020)	
175	01/10/2020	NOTICE of Attorney Appearance by Andrew Thompson (Tom) Gorham on behalf of Apple Inc (Gorham, Andrew) (Entered: 01/10/2020)	
176	01/10/2020	SEALED APPLE INC.S NOTICE OF FILING HEARING PRESENTATIONS (Attachments: # 1 Hearing Slides - Apples Motion to Compel Licensing and Negotiation Documents, # 2 Hearing Slides - Apples Motion to Compel Compliant Infringement Contentions)(Smith, Melissa) (Entered: 01/10/2020)	
177	01/10/2020	NOTICE by Apple Inc OF FILING HEARING PRESENTATIONS (Attachments: # 1 Hearing Slides - Apples Motion For Leave to Supplement Invalidity Contentions, # 2 Hearing Slides - Part 1 -	

#	Date	Proceeding Text	Source
		Claim Construction Presentation, # 3 Hearing Slides - Part 2 - Claim Construction Presentation)(Smith, Melissa) (Entered: 01/10/2020)	
178	01/13/2020	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on January 8, 2020 before Judge Robert W. Schroeder, III. (Culbertson, Geoffrey) Forwarded to official court reporter, Ann LaFrenz on 1/13/2020 (bjc). (Entered: 01/13/2020)	
179	01/13/2020	PAPER TRANSCRIPT REQUEST by Apple Inc for proceedings held on January 8, 2020 before Judge Robert W. Schroeder, III. (Smith, Melissa) Forwarded to official court reporter, Ann LaFrenz on 1/13/2020 (bjc). (Entered: 01/13/2020)	
180	01/14/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Brett J Williamson on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7610250. (Williamson, Brett) (Entered: 01/14/2020)	
181	01/14/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Marc J Pensabene on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7610262. (Pensabene, Marc) (Entered: 01/14/2020)	
182	01/14/2020	REDACTION to 176 Sealed Patent Document, by Apple Inc. (Attachments: # 1 Hearing Slides - Apples Motion to Compel Compliant Infringement Contentions)(Smith, Melissa) (Entered: 01/14/2020)	
183	01/15/2020	Joint MOTION Redact the Courts January 3, 2020 Order (DKT. 171) by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 01/15/2020)	
184	01/16/2020	ORDER Requiring Meet and Confer re 123 Opposed SEALED PATENT MOTION To Compel Infringement Contentions Compliant With Patent Rule 3-1(G) Or, In The Alternative, To Preclude Maxells Reliance On Source Code For Infringement filed by Apple Inc. The parties are therefore ORDERED to meet and confer and attempt to resolve this discovery dispute. The parties shall file a joint notice, no later than February 1, 2020, informing the Court whether the disputehas been resolved. Signed by District Judge Robert W. Schroeder, III on 1/16/2020. (slo,) (Entered: 01/16/2020)	
185	01/17/2020	NOTICE by Maxell Ltd. Notice of Filing Hearing Presentation (Attachments: # 1 Maxell, Ltd.'s Claim Construction Presentation, # 2 Apple's Motion for Leave to Supplement Invalidity Contentions)(Culbertson, Geoffrey) (Entered: 01/17/2020)	
186	01/17/2020	SEALED ADDITIONAL ATTACHMENTS to Main Document: 185 Notice Sealed Attachments to Notice of Filing Hearing Presentations. (Attachments: # 1 Apple's Motion to Compel Licensing Negotiation Documents, # 2 Apple's Motion to Compel Infringement Contentions)(Culbertson, Geoffrey) (Entered: 01/17/2020)	
187	01/22/2020	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 01/08/20 before Judge Robert W. Schroeder III. Court Reporter/Transcriber: Anna Renken Lafrenz,Telephone number: (903) 794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 2/12/2020. Release of Transcript Restriction set for 4/21/2020. (Lafrenz, Anna) (Entered: 01/22/2020)	

#	Date	Proceeding Text	Source
188	01/22/2020	Sealed Transcript. (Lafrenz, Anna) (Entered: 01/22/2020)	
189	01/22/2020	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 01/08/20 before Judge Robert W. Schroeder III. Court Reporter/Transcriber: Anna Renken Lafrenz,Telephone number: (903) 794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 2/12/2020. Release of Transcript Restriction set for 4/21/2020. (Lafrenz, Anna) (Entered: 01/22/2020)	
190	01/22/2020	ORDER granting 183 Joint Motion to Redact the Courts January 3, 2020 Order. The Clerk is directed to file Docket No. 183-1 on the Docket. Signed by District Judge Robert W. Schroeder, III on 1/22/2020. (slo,) (Entered: 01/22/2020)	
191	01/22/2020	REDACTION to 171 SEALED ORDER re 57 Amended SEALED PATENT MOTION TO TRANSFER UNDER 28 U.S.C. § 1404(a) by Apple Inc.; 97 Opposed SEALED PATENT MOTION to Stay Pending Decision on its Motion to Transfer Venue Pursuant to 28 U.S.C. § 1404(a) by Apple Inc. (slo,) (Entered: 01/22/2020)	
192	01/27/2020	NOTICE of Discovery Disclosure by Apple Inc Regarding Amended Initial and Additional Disclosures (Smith, Melissa) (Entered: 01/27/2020)	
193	01/31/2020	NOTICE OF DOCKETING. A writ of mandamus has been filed and assigned Federal Circuit case number 2020-115. (slo,) (Entered: 01/31/2020)	
194	02/03/2020	Sealed Joint Notice. (Beaber, Jamie) (Entered: 02/03/2020)	
195	02/04/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Michael L. Lindinger on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7645669. (Lindinger, Michael) (Entered: 02/04/2020)	
196	02/06/2020	REDACTION to 194 Sealed Document by Maxell Ltd.. (Beaber, Jamie) (Entered: 02/06/2020)	
197	02/14/2020	Opposed SEALED MOTION to Compel by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 02/14/2020)	
198	02/19/2020	REDACTION to 197 Opposed SEALED MOTION to Compel by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 02/19/2020)	
199	02/20/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 197 Opposed SEALED MOTION to Compel filed by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 02/20/2020)	
200	02/24/2020	REDACTION to 199 Sealed Patent Response to Sealed Patent Motion by Apple Inc. (Attachments: # 1 Exhibit A)(Smith, Melissa) (Entered: 02/24/2020)	
201	02/24/2020	ORDER granting 130 Motion for Leave to Amend Invalidity Contentions. Signed by District Judge Robert W. Schroeder, III on 02/24/20. (lfs,) (Entered: 02/24/2020)	
203	02/26/2020	ORDER REFERRING MOTION 197 Opposed SEALED MOTION to Compel filed by Maxell Ltd. to U. S. Magistrate Judge Caroline Craven for decision.. Signed by District Judge Robert W. Schroeder, III on 02/26/20. (lfs,) (Entered: 02/26/2020)	

#	Date	Proceeding Text	Source
205	02/28/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 197 Opposed SEALED MOTION to Compel filed by Apple Inc. (Attachments: # 1 Exhibits A-J, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 02/28/2020)	
206	03/03/2020	REDACTION to 205 Sealed Patent Response to Sealed Patent Motion by Apple Inc. (Attachments: # 1 Exhibits A-J, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/03/2020)	
207	03/03/2020	Opposed SEALED MOTION for Extension of Time to Supplement Infringement Contentions by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/03/2020)	
208	03/03/2020	Unopposed MOTION to Expedite Briefing on Opposed Motion for Extension of Time to Supplement Infringement Contentions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/03/2020)	
209	03/05/2020	ORDER granting 208 Plaintiff's Unopposed Motion for Expedited Briefing. It is therefore ORDERED that Defendant Apple Inc file its response to Maxells Motion for Extension of Time to Supplement Infringement Contentions Pursuant to P.R. 3-1(g) (Docket No. 207) by 5 p.m. on March 6, 2020. No further briefing will be permitted, and no hearing will be required. Signed by District Judge Robert W. Schroeder, III on 03/05/2020. (lfs,) (Entered: 03/05/2020)	
210	03/05/2020	Opposed SEALED MOTION for Sanctions by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A to Miller Declaration, # 3 Exhibit B to Miller Declaration, # 4 Exhibit C to Miller Declaration, # 5 Exhibit D to Miller Declaration, # 6 Exhibit E to Miller Declaration, # 7 Exhibit F to Miller Declaration, # 8 Exhibit G to Miller Declaration, # 9 Exhibit H to Miller Declaration, # 10 Exhibit I to Miller Declaration, # 11 Exhibit J to Miller Declaration, # 12 Exhibit K to Miller Declaration, # 13 Exhibit L to Miller Declaration, # 14 Exhibit M to Miller Declaration, # 15 Exhibit N to Miller Declaration, # 16 Exhibit O to Miller Declaration, # 17 Exhibit P to Miller Declaration, # 18 Exhibit Q to Miller Declaration, # 19 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/05/2020)	
211	03/05/2020	MOTION to Expedite Briefing on its Motion for Sanctions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/05/2020)	
212	03/06/2020	REDACTION to 207 Opposed SEALED MOTION for Extension of Time to Supplement Infringement Contentions by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/06/2020)	
213	03/06/2020	ORDER. Pursuant to the provisions of 28 U.S.C. § 636(b)(1) and (3) and the Amended Order for the Adoption of Local Rules for Assignment of Duties to United States Magistrate Judges, it is hereby ORDERED that Maxells Motion for Sanctions (Docket No. 210) and Maxells Motion to Expedite Briefing (Docket No. 211) are REFERRED to the Honorable Caroline M. Craven for decision. Signed by District Judge Robert W. Schroeder, III on 03/06/2020. (lfs,) (Entered: 03/06/2020)	
214	03/06/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 207 Opposed SEALED MOTION for Extension of Time to Supplement Infringement Contentions filed by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/06/2020)	

#	Date	Proceeding Text	Source
215	03/06/2020	ORDER REGARDING EXPEDITED BRIEFING SCHEDULE AND SETTING HEARING ON PENDING MOTIONS. It is ORDERED that Maxell, Ltd.s Motion for Expedited Briefing on its Motion for Sanctions (Docket Entry # 211) is GRANTED, as modified. It is further ORDERED that Apple Inc. shall file an expedited response to Maxell, Ltd.s Opposed Motion for Sanctions (Docket Entry # 210) on or before Monday, March 16, 2020 at 8:00 a.m. Any reply shall be filed on or before March 18, 2020 at noon, and any surreply shall be filed on or before March 23, 2020 at 8:00 a.m. It is further ORDERED that Maxell, Ltd.s Opposed Motion to Compel (Docket Entry # 197) and Maxell, Ltd.s Opposed Motion for Sanctions (Docket Entry # 210) are scheduled for hearing before the undersigned at 10:00 a.m on Tuesday, March 17, 2020 at the United States District Court, 500 N. Stateline, Fourth Floor Courtroom, Texarkana Texas. Each side is limited to one hour for oral argument at the hearing. This includes presentation of both motions and any responses or replies thereto. It is further ORDERED that to the extent they have not already done so, the parties shall forward courtesy copies of all relevant briefing to the undersigned as soon as practicable. Signed by U. S. Magistrate Judge Craven on 03/06/2020.(lfs,) (Entered: 03/06/2020)	
216	03/09/2020	NOTICE of Attorney Appearance - Pro Hac Vice by David Sebastian Almeling on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7699583. (Almeling, David) (Entered: 03/09/2020)	
217	03/09/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Bradley M Berg on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7699585. (Berg, Bradley) (Entered: 03/09/2020)	
218	03/09/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Cameron William Westin on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7699587. (Westin, Cameron) (Entered: 03/09/2020)	
219	03/09/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Mark Liang on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7699802. (Liang, Mark) (Entered: 03/09/2020)	
220	03/09/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Graham (Gray) M Buccigross on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7699801. (Buccigross, Graham (Gray)) (Entered: 03/09/2020)	
221	03/09/2020	REDACTION to 210 Opposed SEALED MOTION for Sanctions by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A to Miller Declaration, # 3 Exhibit B to Miller Declaration, # 4 Exhibit C to Miller Declaration, # 5 Exhibit D to Miller Declaration, # 6 Exhibit E to Miller Declaration, # 7 Exhibit F to Miller Declaration, # 8 Exhibit G to Miller Declaration, # 9 Exhibit H to Miller Declaration, # 10 Exhibit I to Miller Declaration, # 11 Exhibit J to Miller Declaration, # 12 Exhibit K to Miller Declaration, # 13 Exhibit L to Miller Declaration, # 14 Exhibit M to Miller Declaration, # 15 Exhibit N to Miller Declaration, # 16 Exhibit O to Miller Declaration, # 17 Exhibit P to Miller Declaration, # 18 Exhibit Q to Miller Declaration, # 19 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/09/2020)	
222	03/09/2020	NOTICE of Attorney Appearance by Bill Trac on behalf of Apple Inc (Trac, Bill) (Entered: 03/09/2020)	
223	03/09/2020	ORDER denying 207 Sealed Motion for Extension of Time. Maxell shall produce infringement contentions reflecting source code that was produced prior to February 12, 2020. Following resolution of Maxells motion to compel (and the completion of source code production pursuant to such motion to compel, if applicable), Maxell may seek leave to supplement its contentions. Signed by	

#	Date	Proceeding Text	Source
		District Judge Robert W. Schroeder, III on 03/09/20. (lfs,) (Entered: 03/09/2020)	
224	03/09/2020	Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 by Apple Inc. (Attachments: # 1 Exhibits A-E, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/09/2020)	
225	03/10/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Melody Drummond Hansen on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7701596. (Hansen, Melody) (Entered: 03/10/2020)	
226	03/10/2020	REDACTION to 214 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/10/2020)	
227	03/11/2020	REDACTION to 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 by Apple Inc. (Attachments: # 1 Exhibit)(Smith, Melissa) (Entered: 03/11/2020)	
228	03/12/2020	Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS by Apple Inc. (Attachments: # 1 Exhibit, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/12/2020)	
229	03/13/2020	REDACTION to 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS by Apple Inc. (Attachments: # 1 Exhibit)(Smith, Melissa) (Entered: 03/13/2020)	
230	03/13/2020	ORDER REGARDING HEARING ON PENDING MOTIONS. It is ORDERED that the March 17, 2020 hearing is CANCELLED. It is further ORDERED that Apple Inc. shall file an expedited response to Maxell, Ltd.s Opposed Motion for Sanctions (Docket Entry # 210) on or before Thursday, March 19, 2020. Any reply shall be filed on or before March 25, 2020, and any surreply shall be filed on or before March 31, 2020. It is further ORDERED that to the extent they have not already done so, the parties shall forward courtesy copies of all relevant briefing to the undersigned as soon as practicable. Signed by Magistrate Judge Caroline Craven on 03/13/20. (lfs,) (Entered: 03/13/2020)	
231	03/15/2020	Emergency MOTION to Amend/Correct 46 Scheduling Order,,,, Terminate Motions,,, (Emergency Joint Motion to Partially Amend Docket Control Order) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/15/2020)	
232	03/16/2020	AMENDED DOCKET CONTROL ORDER GRANTING 231 Emergency MOTION to Amend/Correct 46 Scheduling Order. SCHEDULING ORDER:(Pretrial Conference set for 10/6/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Selection set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Dispositive Motion Hearing set for 9/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Any remaining Dispositive Motions due by 6/30/2020., Proposed Pretrial Order due by 9/22/2020.) Signed by District Judge Robert W. Schroeder, III on 03/16/20. (lfs,) Modified on 3/16/2020 (lfs,). (Entered: 03/16/2020)	
233	03/17/2020	Unopposed MOTION to Withdraw as Attorney ANTHONY GENE BEASLEY by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 03/17/2020)	
234	03/18/2020	ORDER granting 233 Unopposed MOTION to Withdraw as Attorney ANTHONY GENE BEASLEY filed by Apple Inc. It is	

#	Date	Proceeding Text	Source
		therefore ORDERED that Anthony Gene Beasley is withdrawn as counsel for Apple Inc., and the clerk shall discontinue all CM/ECF notices in this matter to Anthony Gene Beasley. Signed by District Judge Robert W. Schroeder, III on 03/18/20. (lfs,) (Entered: 03/18/2020)	
235	03/18/2020	CLAIM CONSTRUCTION MEMORANDUM AND ORDER. Signed by District Judge Robert W. Schroeder, III on 03/18/20. (lfs,) (Entered: 03/18/2020)	
236	03/19/2020	ORDER denying hearing re 197 Opposed SEALED MOTION to Compel filed by Maxell Ltd., and reserving ruling on 210 Opposed SEALED MOTION for Sanctions filed by Maxell Ltd. Accordingly, it isORDERED that on or before March 26, 2020, Maxell shall file a reply to Apples response to Maxells motion to compel, clearly setting forth the documents still at issue. Apple shall file any surreply on or before March 31, 2020. The parties are allowed fifteen pages for the reply and surreply briefing. The Court will rule on the motion to compel on the papers the week of April 6, 2020, as previously indicated. It is further ORDERED that the Court will determine at a later date whether an in-person hearing on Maxells motion for sanctions is warranted. If so, the Court will schedule the hearing when safe to do so. Otherwise, the Court will rule on the papers as soon as practicable. Signed by Magistrate Judge Caroline Craven on 03/19/20. (lfs,) (Entered: 03/19/2020)	
237	03/19/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 210 Opposed SEALED MOTION for Sanctions filed by Apple Inc. (Attachments: # 1 Decl. Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Decl. Husain, # 16 Decl. Zhou, # 17 Text of Proposed Order)(Smith, Melissa) (Entered: 03/19/2020)	
238	03/23/2020	REDACTION to 237 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Decl. Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Decl. Husain, # 16 Decl. Zhou, # 17 Text of Proposed Order)(Smith, Melissa) (Entered: 03/23/2020)	
239	03/24/2020	Opposed MOTION to Stay PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 03/24/2020)	
240	03/24/2020	SEALED RESPONSE to Motion re 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 filed by Maxell Ltd.. (Attachments: # 1 Exhibit A-E, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/24/2020)	
241	03/25/2020	SEALED REPLY in Support of Motion re 210 Opposed SEALED MOTION for Sanctions filed by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit AA, # 3 Exhibit BB, # 4 Exhibit CC, # 5 Exhibit R, # 6 Exhibit S, # 7 Exhibit T, # 8 Exhibit U, # 9 Exhibit V, # 10 Exhibit W, # 11 Exhibit X, # 12 Exhibit Y, # 13 Exhibit Z, # 14 Appendix A)(Beaber, Jamie) (Entered: 03/25/2020)	
242	03/26/2020	SEALED RESPONSE to Motion re 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS filed by Maxell Ltd.. (Attachments: # 1 Exhibit A-H, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/26/2020)	

#	Date	Proceeding Text	Source
243	03/26/2020	MOTION for Leave to File Excess Pages by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/26/2020)	
244	03/26/2020	SEALED REPLY to Response to Motion re 197 Opposed SEALED MOTION to Compel filed by Maxell Ltd.. (Attachments: # 1 Exhibit D - K)(Beaber, Jamie) (Entered: 03/26/2020)	
245	03/26/2020	***FILED IN ERROR. PLEASE IGNORE. ATTORNEY TO REFILE.******RESPONSE in Opposition re 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 (Public Version) filed by Maxell Ltd.. (Attachments: # 1 Exhibit A - E, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 3/27/2020 (lfs,). (Entered: 03/26/2020)	
	03/27/2020	***FILED IN ERROR. Document # 245,. PLEASE IGNORE. ATTORNEY WILL REFILE*** (lfs,) (Entered: 03/27/2020)	
246	03/27/2020	REDACTION to 240 Sealed Response to Motion by Maxell Ltd.. (Attachments: # 1 Exhibit A-E, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/27/2020)	
247	03/27/2020	MOTION Notice of NonOpposition and Request for Reciprocal Extension of Exhibit Pages re 243 MOTION for Leave to File Excess Pages by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 03/27/2020)	
248	03/27/2020	ORDER granting 243 Motion for Leave to File Excess Pages. It is ORDERED that Maxell, Ltd.s Partially Opposed Motion for Leave to Exceed Page Limitfor Attachments to its reply in Support of Motion to Compel (Docket Entry # 243) is hereby GRANTED. Signed by Magistrate Judge Caroline Craven on 03/27/20. (lfs,) (Entered: 03/27/2020)	
249	03/27/2020	ORDER granting 247 Notice of Non-Opposition and Motion for Reciprocal Extension of Exhibit Pages. The Court grants Apple leave to attach eight pages of exhibits to its Sur-Reply in Opposition to Maxell's Opposed Motion to Compel. Signed by Magistrate Judge Caroline Craven on 3/27/20. (hma) (Entered: 03/27/2020)	
250	03/30/2020	REDACTION to 241 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit AA, # 3 Exhibit BB, # 4 Exhibit CC, # 5 Exhibit R, # 6 Exhibit S, # 7 Exhibit T, # 8 Exhibit U, # 9 Exhibit V, # 10 Exhibit W, # 11 Exhibit X, # 12 Exhibit Y, # 13 Exhibit Z, # 14 Appendix A)(Beaber, Jamie) (Entered: 03/30/2020)	
251	03/30/2020	REDACTION to 242 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Exhibit A-H, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/30/2020)	
252	03/30/2020	REDACTION to 244 Sealed Reply to Response to Motion by Maxell Ltd.. (Attachments: # 1 Exhibit D - K)(Beaber, Jamie) (Entered: 03/30/2020)	
253	03/30/2020	ORDER. Apple has moved to compel Maxell to provide complete interrogatory responses. Docket No. 224. The Courts Standing Order only allows Maxell to file a response to Apples motion (i.e., Apple is not afforded an opportunity to reply. Moreover, under the standing order, the parties must meet and confer within 72 hours of the Court setting Apples motion for a hearing and promptly notify the Court of the results of that meeting by filing a joint report of no more than two pages. Given the current climate, including General Order 20-03, it is ORDERED that Apple may file a reply brief in support of its motion to compel within seven days of this order. It is further ORDERED that the parties must meet and confer within 72 hours of service of Apples reply or within 10 days of this order, whichever is sooner. It is finally ORDERED the	

#	Date	Proceeding Text	Source
		parties shall promptly notify the Court of the result of that meeting by filing a joint report of no more than two pages. Signed by District Judge Robert W. Schroeder, III on 03/30/20. (lfs.) (Entered: 03/30/2020)	
254	03/31/2020	SEALED PATENT MOTION RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS by Apple Inc. (Attachments: # 1 Exhibits A1-D5, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/31/2020)	
255	03/31/2020	Unopposed SEALED PATENT MOTION TO EXCEED THE PAGE LIMIT AND SUBMIT A CHART IN RESPONSE TO THE CHART SUBMITTED BY MAXELL IN EXCESS OF THE PAGE LIMIT by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 03/31/2020)	
256	03/31/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 210 Opposed SEALED MOTION for Sanctions filed by Apple Inc. (Attachments: # 1 Exhibit 14, # 2 Exhibit 15, # 3 Exhibit 16, # 4 Exhibit 17, # 5 Exhibit 18)(Smith, Melissa) (Entered: 03/31/2020)	
257	03/31/2020	SEALED PATENT ADDITIONAL ATTACHMENTS to Main Document: 256 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion,. (Attachments: # 1 Decl. Simmons)(Smith, Melissa) (Entered: 03/31/2020)	
258	03/31/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 197 Opposed SEALED MOTION to Compel filed by Apple Inc. (Attachments: # 1 Exhibits K-Z)(Smith, Melissa) (Entered: 03/31/2020)	
259	04/01/2020	ORDER granting 255 Apple Inc.'s Unopposed Motion to Exceed The Page Limit and Submit a Chart In Response to the Chart Submitted by Maxwell In Excess of the Page Limit. Signed by Magistrate Judge Caroline Craven on 04/01/20. (lfs,) (Entered: 04/01/2020)	
260	04/02/2020	REDACTION to 254 SEALED PATENT MOTION RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS by Apple Inc. (Attachments: # 1 Exhibits A1-D5, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 04/02/2020)	
261	04/02/2020	REDACTION to 255 Unopposed SEALED PATENT MOTION TO EXCEED THE PAGE LIMIT AND SUBMIT A CHART IN RESPONSE TO THE CHART SUBMITTED BY MAXELL IN EXCESS OF THE PAGE LIMIT by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 04/02/2020)	
262	04/02/2020	REDACTION to 256 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Exhibit 14, # 2 Exhibit 15, # 3 Exhibit 16, # 4 Exhibit 17, # 5 Exhibit 18)(Smith, Melissa) (Entered: 04/02/2020)	
263	04/02/2020	REDACTION to 257 Sealed Patent Additional Attachments to Main Document by Apple Inc. (Attachments: # 1 Decl. Simmons)(Smith, Melissa) (Entered: 04/02/2020)	
264	04/02/2020	REDACTION to 258 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion by Apple Inc. (Attachments: # 1 Exhibits K-Z)(Smith, Melissa) (Entered: 04/02/2020)	
265	04/06/2020	SEALED PATENT REPLY to Response to PATENT Motion re 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 filed by Apple Inc. (Smith, Melissa) (Entered: 04/06/2020)	
266	04/06/2020	Sealed Report Regarding 197 Opposed SEALED MOTION to Compel by Maxell Ltd.. (Beaber, Jamie) (Entered: 04/06/2020)	

#	Date	Proceeding Text	Source
267	04/07/2020	RESPONSE in Opposition re 239 Opposed MOTION to Stay PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A to Miller Declaration, # 3 Exhibit B to Miller Declaration, # 4 Exhibit C to Miller Declaration, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/07/2020)	
268	04/07/2020	SEALED PATENT RESPONSE by Apple Inc to 266 Sealed Document filed by Apple Inc. (Smith, Melissa) (Entered: 04/07/2020)	
269	04/08/2020	REDACTION to 265 Sealed PATENT Reply to Response to PATENT Motion by Apple Inc. (Smith, Melissa) (Entered: 04/08/2020)	
270	04/08/2020	NOTICE by Maxell Ltd. re 266 Sealed Document Supplement to Report Regarding Maxell LTD.'s Motion to Compel (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 04/08/2020)	
271	04/08/2020	REDACTION to 266 Sealed Document by Maxell Ltd.. (Beaber, Jamie) (Entered: 04/08/2020)	
272	04/08/2020	NOTICE by Apple Inc of Compliance Regarding Final Election of Prior Art (Smith, Melissa) (Entered: 04/08/2020)	
273	04/08/2020	ORDER. The Court issues the following sua sponte. Contemporaneously with this Order, the undersigned United States Magistrate Judge is entering an Order granting in part and denying in part Maxell, Ltd.s Opposed Motion to Compel (Docket Entry # 197). Because the Court cites at length allegations from briefing which the parties have filed under seal, the Court has sealed theOrder. The Court will unseal the Order granting in part and denying in partMaxell, Ltd.s Opposed Motion to Compel (Docket Entry # 197). Before doing so, however, the Court will allow the parties twenty-one days from the date of entry of this Order in which to submit a proposed publicly-available redacted version of the Order. The parties shall redact only those portions of the Order with respect to which the parties have a legitimate and overridingbusiness interest in maintaining confidentiality and shall be prepared to submit a particularized showing regarding those redactions in the event the Court finds it necessary. The parties shall advise the Court in writing if no redactions are necessary. Signed by Magistrate Judge Caroline Craven on 04/08/20. (lfs,) (Entered: 04/08/2020)	
275	04/09/2020	REDACTION to 268 Sealed Patent Response to Non-Motion by Apple Inc. (Smith, Melissa) (Entered: 04/09/2020)	
276	04/13/2020	STATUS REPORT REGARDING APPLES MOTION TO COMPEL (D.I. 224) by Apple Inc. (Smith, Melissa) (Entered: 04/13/2020)	
277	04/14/2020	Joint MOTION to Amend/Correct by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 04/14/2020)	
278	04/14/2020	REPLY to Response to Motion re 239 Opposed MOTION to Stay PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Apple Inc. (Smith, Melissa) (Entered: 04/14/2020)	
279	04/15/2020	ORDER for Reply Briefing re 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS filed by Apple Inc. It is ORDERED that Apple may file a reply brief in support of its motion for a protective order within seven days of this order. It is further ORDERED that the parties must meet and confer within 72 hours of service of Apples reply or within 10 days of this order, whichever is sooner. It is finally ORDERED the parties shall promptly notify the Court of the result of that meeting by filing a joint report of no more than two pages. Signed by District Judge	

#	Date	Proceeding Text	Source
		Robert W. Schroeder, III on 04/15/20. (lfs,) (Entered: 04/15/2020)	
280	04/15/2020	SEALED RESPONSE to Motion re 254 SEALED PATENT MOTION RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS filed by Maxell Ltd.. (Attachments: # 1 Exhibits A-J, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/15/2020)	
281	04/17/2020	REDACTION to 280 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Exhibits A-J, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/17/2020)	
282	04/17/2020	ORDER for payment of services to Technical Advisor, Shane A. Nelson. Signed by District Judge Robert W. Schroeder, III on 04/17/20. (lfs,) (Entered: 04/17/2020)	
283	04/20/2020	AMENDED SCHEDULING ORDER:(Pretrial Conference set for 10/6/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Selection set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 10/26/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Dispositive Motion Hearing set for 9/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Proposed Pretrial Order due by 9/22/2020.), Motions terminated: 277 Joint MOTION to Amend/Correct filed by Apple Inc.. Signed by District Judge Robert W. Schroeder, III on 04/20/20. (lfs,) (Entered: 04/20/2020)	
284	04/20/2020	SEALED PATENT MOTION APPLE INC.S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 04/20/2020)	
285	04/20/2020	Unopposed MOTION to Expedite BRIEFING ON RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 04/20/2020)	
286	04/21/2020	ORDER re 254 SEALED PATENT MOTION RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS filed by Apple Inc. It is ORDERED that Apple may file a reply brief in support of motion for protective order within 7 days of this order. It is further ORDERED that parties must meet and confer within 72 hours of service of Apples reply or within 10 days of this order, whichever is sooner. It is finally ORDERED the parties shall promptly notify the Court of the result of that meeting by filing a joint report of no more than two pages..(lfs,) (Entered: 04/21/2020)	
287	04/21/2020	ORDER GRANTING 285 Unopposed MOTION to Expedite BRIEFING ON RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT filed by Apple Inc Accordingly, it is ORDERED that the following deadlines for briefing are in effect: Brief Due Date Apples Motion to Compel April 20, 2020; Maxells Response April 28, 2020; Apples Reply May 1, 2020.It is further ORDERED that the parties must meet and confer by 5:00 p.m. on May 4, 2020 of Apples reply. It is	

#	Date	Proceeding Text	Source
		finally ORDERED the parties shall notify the Court of the result of that meeting by filing a joint report of no more than two pages by 5:00 p.m. on May 5, 2020. Signed by District Judge Robert W. Schroeder, III on 04/21/20. (lfs,) (Entered: 04/21/2020)	
288	04/22/2020	Joint MOTION Submission of proposed redacted version of the Order granting in part and denying in part Maxell, Ltd.s Opposed Motion to Compel by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 04/22/2020)	
289	04/22/2020	SUR-REPLY to Reply to Response to Motion re 239 Opposed MOTION to Stay PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit D, # 3 Exhibit E)(Beaber, Jamie) (Entered: 04/22/2020)	
290	04/22/2020	SEALED NOTICE OF COMPLIANCE. (Smith, Melissa) (Entered: 04/22/2020)	
291	04/22/2020	SEALED PATENT REPLY to Response to PATENT Motion re 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS filed by Apple Inc. (Smith, Melissa) (Entered: 04/22/2020)	
292	04/22/2020	**Unsealed Per USCA Federal Circuit Order #314 **SEALED ORDER from FEDERAL CIRCUIT.(lfs,) Modified on 5/5/2020 (slo,). (Entered: 04/23/2020)	
293	04/23/2020	REDACTION to 284 SEALED PATENT MOTION APPLE INC.S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 04/23/2020)	
294	04/24/2020	ORDER. Before the Court is the Parties' proposed redacted version of the Order granting in part and denying in part Maxwell, Ltd.'s Opposed Motion to Compel (Docket Entry #288). The Court, having considered same, is of the opinion the motion should be GRANTED. Signed by Magistrate Judge Caroline Craven on 04/24/20. (lfs,) (Entered: 04/24/2020)	
295	04/24/2020	REDACTION OF ORDER 274 (Sealed Order previously filed on 04/08/2020). Signed by Magistrate Judge Caroline Craven on 04/24/20. (lfs,) (Entered: 04/24/2020)	
296	04/27/2020	REDACTION to 291 Sealed PATENT Reply to Response to PATENT Motion by Apple Inc. (Smith, Melissa) (Entered: 04/27/2020)	
297	04/27/2020	REDACTION to 290 Sealed Patent Document by Apple Inc. (Smith, Melissa) (Entered: 04/27/2020)	
298	04/27/2020	ORDER denying without prejudice 239 Motion to Stay. Signed by District Judge Robert W. Schroeder, III on 04/27/20. (lfs,) (Entered: 04/27/2020)	
299	04/28/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 284 SEALED PATENT MOTION APPLE INC.S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT filed by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/28/2020)	
300	04/28/2020	SEALED PATENT REPLY to Response to PATENT Motion re 254 SEALED PATENT MOTION RENEWED MOTION TO COMPEL	

#	Date	Proceeding Text	Source
		LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS filed by Apple Inc. (Smith, Melissa) (Entered: 04/28/2020)	
301	04/29/2020	ORDER. Apple has moved for a protective order regarding certain Maxell 30(b)(6) deposition topics. Docket No. 228. On April 15, 2020, the Court ordered the parties to meet and confer within 72 hours of service of Apples reply or within 10 days of the order and to promptly notify the Court of the result of that meeting. Docket No. 279. Although it has been 14 days since the Courtsorder and 7 days since Apples reply, the parties have not yet filed the joint report. Accordingly, it is hereby ORDERED that the parties shall file the joint report notifying the Court of the result of the meet and confer by 5:00 p.m. on Thursday, April 30, 2020. Signed by District Judge Robert W. Schroeder, III on 04/29/20. (lfs.) (Entered: 04/29/2020)	
302	04/30/2020	REDACTION to 299 Sealed Patent Response to Sealed Patent Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 04/30/2020)	
303	04/30/2020	STATUS REPORT JOINT REPORT REGARDING APPLES MOTION FOR PROTECTIVE ORDER (D.I. 228, 242, 291) by Apple Inc. (Smith, Melissa) (Entered: 04/30/2020)	
304	05/01/2020	REDACTION to 300 Sealed PATENT Reply to Response to PATENT Motion by Apple Inc. (Smith, Melissa) (Entered: 05/01/2020)	
305	05/01/2020	STATUS REPORT JOINT REPORT REGARDING APPLES RENEWED MOTION TO COMPEL (D.I. 254, 280, 300) by Apple Inc. (Smith, Melissa) (Entered: 05/01/2020)	
306	05/01/2020	SEALED PATENT REPLY to Response to PATENT Motion re 284 SEALED PATENT MOTION APPLE INC.S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT filed by Apple Inc. (Smith, Melissa) (Entered: 05/01/2020)	
307	05/01/2020	Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE by Apple Inc. (Attachments: # 1 Exhibits A-J, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 05/01/2020)	
308	05/01/2020	DEFICIENT DOCUMENT. PLEASE IGNORE. SEALED MOTION For Leave to File a Sur-Reply in Opposition to Apple Inc.'s Renewed Motion to Compel Licensing and Negotiation Documents and for Sanctions by Maxell Ltd.. (Attachments: # 1 Proposed Sur-Reply, # 2 Text of Proposed Order)(Beaber, Jamie) Modified on 5/4/2020 (slo,). (Entered: 05/01/2020)	
	05/04/2020	NOTICE of Deficiency regarding the #308 submitted No Certificate of Authorization to File Under Seal. Correction should be made by one business day (slo,) (Entered: 05/04/2020)	
309	05/04/2020	Opposed MOTION for Leave to File to File a Sur-Reply in Opposition to Apple Inc.'s Renewed Motion to Compel Licensing and Negotiation Documents and for Sanctions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2020)	
310	05/04/2020	SEALED SUR-REPLY to Reply to Response to Motion re 254 SEALED PATENT MOTION RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS filed by Maxell Ltd.. (Beaber, Jamie) (Entered:	

#	Date	Proceeding Text	Source
		05/04/2020)	
311	05/04/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 309 Opposed MOTION for Leave to File to File a Sur-Reply in Opposition to Apple Inc.'s Renewed Motion to Compel Licensing and Negotiation Documents and for Sanctions filed by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 05/04/2020)	
312	05/04/2020	Opposed MOTION for Leave to File a Sur-Reply in Opposition to Apple Inc.'s Renewed Motion to Compel Infringement Contentions Compliant with Patent Rule 3-1(G) and for Schedule Extension or, in the Alternative, to Preclude Maxell's Reliance on Source Code for Infringement by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2020)	
313	05/04/2020	SEALED SUR-REPLY to Reply to Response to Motion re 284 SEALED PATENT MOTION APPLE INC.S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/04/2020)	
314	05/05/2020	USCA Federal Circuit ORDER unsealing April 22, 2020 Order (Dkt. 292)(slo,) (Entered: 05/05/2020)	
315	05/05/2020	REDACTION to 310 Sealed Sur-Reply to Reply to Response to Motion by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/05/2020)	
316	05/05/2020	STATUS REPORT JOINT REPORT REGARDING APPLES RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) (D.I. 284, 299, 306) by Apple Inc. (Smith, Melissa) (Entered: 05/05/2020)	
317	05/05/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 312 Opposed MOTION for Leave to File a Sur-Reply in Opposition to Apple Inc.'s Renewed Motion to Compel Infringement Contentions Compliant with Patent Rule 3-1(G) and for Schedule Extension or, in the Alternative, to Preclude Maxell's Reliance filed by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 05/05/2020)	
318	05/06/2020	REDACTION to 306 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Smith, Melissa) (Entered: 05/06/2020)	
319	05/06/2020	REDACTION to 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE by Apple Inc. (Attachments: # 1 Exhibits A-J)(Smith, Melissa) (Entered: 05/06/2020)	
320	05/06/2020	REDACTION to 313 Sealed Sur-Reply to Reply to Response to Motion, APPLE INC'S RENEWED MOTION TO COMPEL INFRINGEMENT CONTENTIONS COMPLIANT WITH PATENT RULE 3-1(G) AND FOR SCHEDULE EXTENSION OR, IN THE ALTERNATIVE, TO PRECLUDE MAXELLS RELIANCE ON SOURCE CODE FOR INFRINGEMENT by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/06/2020)	
321	05/06/2020	ORDER Setting Telephonic Hearing on Motion 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19, 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS : Telephonic Hearing set for 5/14/2020 10:00 AM before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 5/6/2020. (slo,) (Entered: 05/06/2020)	

#	Date	Proceeding Text	Source
322	05/06/2020	REDACTION to 311 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Exhibit 1)(Smith, Melissa) (Entered: 05/06/2020)	
323	05/06/2020	REDACTION to 317 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Exhibit 1)(Smith, Melissa) (Entered: 05/06/2020)	
324	05/06/2020	STIPULATION Regarding Extension of Deadlines to Submit Initial and Rebuttal Expert Reports on the '794 Patent by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/06/2020)	
325	05/08/2020	ORDER re 324 Joint Stipulation Regarding Extension of Deadline to Submit Initial and Rebuttal Expert Reports filed by Maxell Ltd. It is ORDERED that the parties shall exchange initial expert reports regarding the U.S. Patent. No. 6,329,794 on May 14, 2020 and shall exchange rebuttal expert reports regarding the same on June 11, 2020. This order does not affect or alter any other deadlines in this case. Signed by District Judge Robert W. Schroeder, III on 5/8/2020. (slo,) (Entered: 05/08/2020)	
326	05/08/2020	NOTICE by Apple Inc of Compliance Regarding Expert Witnesses (Smith, Melissa) (Entered: 05/08/2020)	
327	05/08/2020	NOTICE by Maxell Ltd. of Compliance Regarding Expert Witnesses (Culbertson, Geoffrey) (Entered: 05/08/2020)	
328	05/11/2020	ORDER RESETTING Telephonic Hearing on Motion 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19, 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS :(Telephonic Hearing RESET for 5/14/2020 02:00 PM before District Judge Robert W. Schroeder III.) Signed by District Judge Robert W. Schroeder, III on 5/11/2020. (slo,) (Entered: 05/11/2020)	
329	05/14/2020	ORDER denying as moot 224 Opposed SEALED PATENT MOTION Compel Complete Responses to Interrogatory Nos 6, 10, 12, 17, and 19 filed by Apple Inc, and 228 Opposed SEALED PATENT MOTION FOR PROTECTIVE ORDER REGARDING CERTAIN MAXELL RULE 30(B)(6) DEPOSITION TOPICS filed by Apple Inc. Hearing set for Thursday, May 14, 2020, at 2:00 p.m. is CANCELLED. Signed by District Judge Robert W. Schroeder, III on 5/14/2020. (slo,) (Entered: 05/14/2020)	
330	05/15/2020	SEALED PATENT DOCUMENT NOTICE OF SUPPLEMENTAL FACTS IN SUPPORT OF APPLES RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS D.I. 254 (Attachments: # 1 Exhibit 1)(Smith, Melissa) (Entered: 05/15/2020)	
331	05/18/2020	SEALED PATENT RESPONSE by Maxell Ltd. to 330 SEALED PATENT DOCUMENT NOTICE OF SUPPLEMENTAL FACTS IN SUPPORT OF APPLES RENEWED MOTION TO COMPEL LICENSING AND NEGOTIATION DOCUMENTS AND FOR SANCTIONS D.I. 254 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 05/18/2020)	
332	05/18/2020	SEALED PATENT RESPONSE to Motion re 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE filed by Maxell Ltd.. (Attachments: # 1 Exhibits, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/18/2020)	
333	05/19/2020	REDACTION to 330 Sealed Patent Document by Apple Inc. (Attachments: # 1 Exhibit 1)(Smith, Melissa) (Entered: 05/19/2020)	
334	05/20/2020	REDACTION to 331 Sealed Patent Response to Non-Motion, by	

#	Date	Proceeding Text	Source
		Maxell Ltd.. (Beaber, Jamie) (Entered: 05/20/2020)	
335	05/20/2020	REDACTION to 332 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Exhibit, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/20/2020)	
336	05/21/2020	NOTICE by Maxell Ltd. re 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE of Supplemental Authority (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 05/21/2020)	
339	05/22/2020	RESPONSE to 336 NOTICE by Maxell Ltd. re 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE filed by Apple Inc. (Smith, Melissa) (Entered: 05/22/2020)	
340	05/28/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Luiz Miranda on behalf of Maxell Ltd.. Filing fee $ 100, receipt number 0540-7810532. (Miranda, Luiz) (Entered: 05/28/2020)	
341	06/01/2020	Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/01/2020)	
342	06/03/2020	ORDER Setting Hearing on Motion 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE : Motion Hearing set for 6/16/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.. Signed by District Judge Robert W. Schroeder, III on 06/03/20. (lfs,) (Entered: 06/03/2020)	
343	06/03/2020	REDACTION to 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/03/2020)	
344	06/08/2020	ORDER Resetting Hearing on Motion 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE : Motion Hearing RESET for 7/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 6/8/2020. (slo,) (Entered: 06/08/2020)	
345	06/12/2020	NOTICE by Maxell Ltd. Notice of Compliance Rebuttal Expert Witnesses (Culbertson, Geoffrey) (Entered: 06/12/2020)	
346	06/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories filed by Apple Inc. (Attachments: # 1 Affidavit Hansen, # 2 EX 19, # 3 EX 20, # 4 EX 21, # 5 EX 22, # 6 EX 23, # 7 EX 24, # 8 EX 25, # 9 EX 26, # 10 EX 27, # 11 EX 28, # 12 EX 29, # 13 EX 30, # 14 EX 31, # 15 EX 32, # 16 Text of Proposed Order)(Smith, Melissa) (Entered: 06/15/2020)	

#	Date	Proceeding Text	Source
347	06/17/2020	ORDER Setting Hearing. At the hearing, Plaintiff and Defendant are each limited to 1.0 hour total in which to present oral argument. Accordingly, it is ORDERED that Maxells Opposed Motion for Sanctions (Docket Entry # 210) is scheduled for hearing before the undersigned at 10:00 a.m on July 28, 2020 at the United States District Court,500 N. Stateline, Fourth Floor Courtroom, Texarkana, Texas Room 403 (Texarkana) before Magistrate Judge Caroline Craven.) Signed by Magistrate Judge Caroline Craven on 06/17/20. (lfs,) (Entered: 06/17/2020)	
348	06/18/2020	REDACTION to 346 Sealed Patent Response to Sealed Patent Motion,, by Apple Inc. (Attachments: # 1 Affidavit Hansen, # 2 Exhibit 19, # 3 Exhibit 20, # 4 Exhibit 21, # 5 Exhibit 22, # 6 Exhibit 23, # 7 Exhibit 24, # 8 Exhibit 25, # 9 Exhibit 26, # 10 Exhibit 27, # 11 Exhibit 28, # 12 Exhibit 29, # 13 Exhibit 30, # 14 Exhibit 31, # 15 Exhibit 32, # 16 Text of Proposed Order)(Smith, Melissa) (Entered: 06/18/2020)	
349	06/23/2020	ORDER Setting Hearing on Motion 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories : Motion Hearing set for 7/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.. Signed by District Judge Robert W. Schroeder, III on 06/23/20. (lfs,) (Entered: 06/23/2020)	
350	06/23/2020	REPLY to Response to Motion re 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 06/23/2020)	
351	06/24/2020	Joint MOTION FOR ENTRY OF ADDENDUM TO PROTECTIVE ORDER by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 06/24/2020)	
352	06/25/2020	USCA Federal Circuit Order re Petition for Writ of Mandamus. The petition for panel rehearing is denied. The petition for rehearing en banc is denied. (slo,) (Entered: 06/25/2020)	
353	06/25/2020	COVID-19 ADDENDUM TO PROTECTIVE ORDER. Signed by District Judge Robert W. Schroeder, III on 06/25/20. (lfs,) (Entered: 06/25/2020)	
354	06/26/2020	NOTICE by Apple Inc Notice of Compliance Regarding Trial Witness List (Smith, Melissa) (Entered: 06/26/2020)	
355	06/26/2020	NOTICE by Maxell Ltd. Notice of Compliance Trial Witness List (Culbertson, Geoffrey) (Entered: 06/26/2020)	
356	06/29/2020	SUR-REPLY to Reply to Response to Motion re 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories filed by Apple Inc. (Attachments: # 1 Affidavit Drummond Hansen, # 2 Exhibit 33, # 3 Exhibit 34)(Smith, Melissa) (Entered: 06/29/2020)	
357	06/30/2020	SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
358	06/30/2020	SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
359	06/30/2020	SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 by Apple Inc. (Attachments: # 1 Affidavit Liang, #	

#	Date	Proceeding Text	Source
		2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
360	06/30/2020	SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
361	06/30/2020	SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Miller Declaration, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G)(Beaber, Jamie) (Entered: 06/30/2020)	
362	06/30/2020	SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
363	06/30/2020	MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS SURVEY EXPERT DR. TLIN ERDEM by Apple Inc. (Attachments: # 1 Affidavit Trac, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
364	06/30/2020	SEALED PATENT MOTION Maxell, LTD.'s Motion to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Report of Dr. Daniel A. Menasce Regarding Non-Infringement of U.S. Patent No. 6,329,794 for Offering Legal Opinions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Geisleichter Declaration, # 3 Exhibit 1, # 4 Exhibit 2)(Beaber, Jamie) (Entered: 06/30/2020)	
365	06/30/2020	SEALED PATENT MOTION TO STRIKE PORTIONS OF MAXELLS OPENING EXPERT REPORTS THAT EXCEED THE SCOPE OF MAXELLS P.R. 3-1 INFRINGEMENT CONTENTIONS AND NEW EXPERT THEORIES OFFERED AFTER EXPERT REPORTS by Apple Inc. (Attachments: # 1 Affidavit Hansen, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
366	06/30/2020	SEALED PATENT MOTION for Summary Judgment of No Invalidity Under 35 USC 102 and 103 of Claims 7, 16, and 17 of U.S. Patent No. 10,212,586 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Lindinger Declaration, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4)(Beaber, Jamie) (Entered: 06/30/2020)	
367	06/30/2020	SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE CONCLUSORY TESTIMONY AND OPINIONS OF MAXELLS EXPERTS RELATING TO DOCTRINE OF EQUIVALENTS AND SOURCE CODE by Apple Inc. (Attachments: # 1 Affidavit Zhou, #	

#	Date	Proceeding Text	Source
		2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
368	06/30/2020	SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
369	06/30/2020	SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Gelsleichter Declaration, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Exhibit 11, # 14 Exhibit 12, # 15 Exhibit 13, # 16 Exhibit 14, # 17 Exhibit 15, # 18 Exhibit 16, # 19 Exhibit 17, # 20 Exhibit 18, # 21 Exhibit 19, # 22 Exhibit 20)(Beaber, Jamie) (Entered: 06/30/2020)	
370	06/30/2020	SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Miranda Declaration, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Exhibit 11)(Beaber, Jamie) (Entered: 06/30/2020)	
371	06/30/2020	***DEFICIENT DOCUMENT. ATTORNEY MUST REFILE*** SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd, Cyberguide and Navtalk Alleged Prior Art by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Miranda Declaration, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6)(Beaber, Jamie) Modified on 7/2/2020 (slo,). (Entered: 06/30/2020)	
372	06/30/2020	SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 by Apple Inc. (Attachments: # 1 Affidavit Bovik, # 2 Exhibit A, # 3 Affidavit Bederson, # 4 Exhibit B, # 5 Affidavit Zhou, # 6 Exhibit 1, # 7 Exhibit 2, # 8 Exhibit 3, # 9 Exhibit 4, # 10 Exhibit 5, # 11 Exhibit 6, # 12 Exhibit 7, # 13 Exhibit 8, # 14 Exhibit 9, # 15 Exhibit 10, # 16 Exhibit 11, # 17 Exhibit 12, # 18 Exhibit 13, # 19 Exhibit 14, # 20 Exhibit 15, # 21 Exhibit 16, # 22 Exhibit 17, # 23 Exhibit 18, # 24 Exhibit 19, # 25 Exhibit 20, # 26 Exhibit 21, # 27 Exhibit 22, # 28 Exhibit 23, # 29 Exhibit 24, # 30 Text of Proposed Order)(Smith, Melissa) (Entered: 06/30/2020)	
373	07/02/2020	REDACTION to 361 SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Miller Declaration, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G)(Beaber, Jamie) (Entered: 07/02/2020)	
374	07/02/2020	REDACTION to 364 SEALED PATENT MOTION Maxell, LTD.'s Motion to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Report of Dr. Daniel A. Menasce Regarding Non-Infringement of U.S. Patent No. 6,329,794 for Offering Legal Opinions by Maxell Ltd.. (Attachments: # 1 Text of Proposed	

#	Date	Proceeding Text	Source
		Order, # 2 Gelsleichter Declaration, # 3 Exhibit 1, # 4 Exhibit 2)(Beaber, Jamie) (Entered: 07/02/2020)	
	07/02/2020	NOTICE of Deficiency regarding the SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd, Cyberguide and Navtalk Alleged Prior Art by Maxell Ltd submitted document 371 - exceeds page limit per Local Rule CV-7. Correction should be made by one business day. (slo,) (Entered: 07/02/2020)	
375	07/02/2020	REDACTION to 366 SEALED PATENT MOTION for Summary Judgment of No Invalidity Under 35 USC 102 and 103 of Claims 7, 16, and 17 of U.S. Patent No. 10,212,586 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Michael L. Lindinger, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4)(Beaber, Jamie) (Entered: 07/02/2020)	
376	07/02/2020	REDACTION to 357 SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
377	07/02/2020	REDACTION to 358 SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
378	07/02/2020	REDACTION to 359 SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
379	07/02/2020	REDACTION to 360 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
380	07/02/2020	REDACTION to 370 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Luiz Miranda, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Exhibit 11)(Beaber, Jamie) (Entered: 07/02/2020)	
381	07/02/2020	REDACTION to 369 SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Alison T. Gelsleichter, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Exhibit 11, # 14 Exhibit 12,	

#	Date	Proceeding Text	Source
		# 15 Exhibit 13, # 16 Exhibit 14, # 17 Exhibit 15, # 18 Exhibit 16, # 19 Exhibit 17, # 20 Exhibit 18, # 21 Exhibit 19, # 22 Exhibit 20)(Beaber, Jamie) (Entered: 07/02/2020)	
382	07/02/2020	SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 07/02/2020)	
383	07/02/2020	SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 07/02/2020)	
384	07/02/2020	REDACTION to 362 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
385	07/02/2020	REDACTION to 365 SEALED PATENT MOTION TO STRIKE PORTIONS OF MAXELLS OPENING EXPERT REPORTS THAT EXCEED THE SCOPE OF MAXELLS P.R. 3-1 INFRINGEMENT CONTENTIONS AND NEW EXPERT THEORIES OFFERED AFTER EXPERT REPORTS by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
386	07/02/2020	REDACTION to 367 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE CONCLUSORY TESTIMONY AND OPINIONS OF MAXELLS EXPERTS RELATING TO DOCTRINE OF EQUIVALENTS AND SOURCE CODE by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
387	07/02/2020	REDACTION to 368 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Text of Proposed Order)(Smith, Melissa) (Entered: 07/02/2020)	
388	07/02/2020	Additional Attachments to Main Document: 385 Redacted Document,.. (Smith, Melissa) (Entered: 07/02/2020)	
389	07/02/2020	REDACTION to 372 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 by Apple Inc. (Attachments: # 1 Affidavit Bovik, # 2 Exhibit A, # 3 Affidavit Bederson, # 4 Exhibit B, # 5 Affidavit Zhou, # 6 Exhibit 1, # 7 Exhibit 2, # 8 Exhibit 3, # 9 Exhibit 4, # 10 Exhibit 5, # 11 Exhibit	

#	Date	Proceeding Text	Source
		6, # 12 Exhibit 7, # 13 Exhibit 8, # 14 Exhibit 9, # 15 Exhibit 10, # 16 Exhibit 11, # 17 Exhibit 12, # 18 Exhibit 13, # 19 Exhibit 14, # 20 Exhibit 15, # 21 Exhibit 16, # 22 Exhibit 17, # 23 Exhibit 18, # 24 Exhibit 19, # 25 Exhibit 20, # 26 Exhibit 21, # 27 Exhibit 22, # 28 Exhibit 23, # 29 Exhibit 24, # 30 Text of Proposed Order)(Gorham, Andrew) (Entered: 07/02/2020)	
390	07/06/2020	REDACTION to 382 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 07/06/2020)	
391	07/06/2020	REDACTION to 383 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 07/06/2020)	
392	07/07/2020	STIPULATION JOINT STIPULATION REGARDING NO INDIRECT INFRINGEMENT by Apple Inc. (Smith, Melissa) (Entered: 07/07/2020)	
393	07/07/2020	ORDER Resetting Hearing on Motions: 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE, 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories : Motion Hearing RESET as TELEPHONIC HEARING on 7/15/2020 10:00 AM before District Judge Robert W. Schroeder III. It is ORDERED that, although any counsel of record may attend the telephonic hearing, for each motion, each party shall designate one attorney only to argue, present evidence and respond to any questions. Signed by District Judge Robert W. Schroeder, III on 7/7/2020. (slo,) (Entered: 07/07/2020)	
394	07/08/2020	NOTICE of Attorney Appearance by Ryan K Yagura on behalf of Apple Inc (Yagura, Ryan) (Entered: 07/08/2020)	
395	07/14/2020	STATUS REPORT (JOINT) REGARDING APPLES MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE (DKT. 307) by Apple Inc. (Smith, Melissa) (Entered: 07/14/2020)	
396	07/14/2020	NOTICE of Attorney Appearance by Harry Lee Gillam, Jr on behalf of Apple Inc (Gillam, Harry) (Entered: 07/14/2020)	
397	07/14/2020	SEALED RESPONSE to Motion re 357 SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL filed by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Proposed Order)(Beaber, Jamie) (Entered: 07/14/2020)	
398	07/15/2020	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 7/15/2020 re 307 Opposed SEALED PATENT MOTION FOR LEAVE TO CONDUCT TWO DEPOSITIONS AFTER THE FACT DEPOSITION DEADLINE filed by Apple Inc. and 341 Opposed SEALED MOTION to Strike Portions of Apple Inc.'s Opening Expert Reports Based on Undisclosed or Unelected Invalidity Theories filed by Maxell Ltd.. (Court Reporter Kate McAlpine) (bas) (Entered: 07/15/2020)	
399	07/15/2020	RESPONSE in Opposition re 363 MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF	

#	Date	Proceeding Text	Source
		PLAINTIFFS SURVEY EXPERT DR. TLIN ERDEM filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit F, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/15/2020)	
400	07/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 362 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit 18, # 3 Exhibit 19, # 4 Exhibit 20, # 5 Exhibit 21, # 6 Exhibit 22, # 7 Exhibit 23, # 8 Exhibit 24, # 9 Exhibit 25, # 10 Exhibit 26, # 11 Exhibit 27, # 12 Exhibit 28, # 13 Exhibit 29, # 14 Exhibit 30, # 15 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/15/2020)	
401	07/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 365 SEALED PATENT MOTION TO STRIKE PORTIONS OF MAXELLS OPENING EXPERT REPORTS THAT EXCEED THE SCOPE OF MAXELLS P.R. 3-1 INFRINGEMENT CONTENTIONS AND NEW EXPERT THEORIES OFFERED AFTER EXPERT REPORTS filed by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Geisleichter, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/15/2020)	
402	07/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 364 SEALED PATENT MOTION Maxell, LTD.'s Motion to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Report of Dr. Daniel A. Menasce Regarding Non-Infringement of U.S. Patent No. 6,329,794 for Offering Legal Opinions filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit3, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 07/15/2020)	
403	07/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 361 SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit H, # 3 Text of Proposed Order)(Smith, Melissa) (Entered: 07/15/2020)	
404	07/15/2020	SEALED RESPONSE to Motion re 358 SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction filed by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Proposed Order)(Beaber, Jamie) (Entered: 07/15/2020)	
405	07/15/2020	SEALED RESPONSE to Motion re 367 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE CONCLUSORY TESTIMONY AND OPINIONS OF MAXELLS EXPERTS RELATING TO DOCTRINE OF EQUIVALENTS AND SOURCE CODE filed by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Proposed Order)(Beaber, Jamie) (Entered: 07/15/2020)	
406	07/15/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 369 SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, #	

#	Date	Proceeding Text	Source
		10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Text of Proposed Order)(Smith, Melissa) (Entered: 07/15/2020)	
407	07/15/2020	SEALED PATENT ADDITIONAL ATTACHMENTS to Main Document: 406 Sealed Patent Response to Sealed Patent Motion,,. (Attachments: # 1 Exhibit 20)(Smith, Melissa) (Entered: 07/15/2020)	
408	07/16/2020	REDACTION to 397 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/16/2020)	
410	07/17/2020	REDACTION to 402 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Text of Proposed Order)(Smith, Melissa) (Entered: 07/17/2020)	
411	07/17/2020	REDACTION to 403 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit H, # 3 Text of Proposed Order)(Smith, Melissa) (Entered: 07/17/2020)	
412	07/17/2020	REDACTION to 406 Sealed Patent Response to Sealed Patent Motion,, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Text of Proposed Order)(Smith, Melissa) (Entered: 07/17/2020)	
413	07/17/2020	REDACTION to 407 Sealed Patent Additional Attachments to Main Document by Apple Inc. (Attachments: # 1 Exhibit 20)(Smith, Melissa) (Entered: 07/17/2020)	
414	07/17/2020	REDACTION to 404 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Michael Lindinger, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/17/2020)	
415	07/17/2020	REDACTION to 400 Sealed Patent Response to Sealed Patent Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit 18, # 3 Exhibit 19, # 4 Exhibit 20, # 5 Exhibit 21, # 6 Exhibit 22, # 7 Exhibit 23, # 8 Exhibit 24, # 9 Exhibit 25, # 10 Exhibit 26, # 11 Exhibit 27, # 12 Exhibit 28, # 13 Exhibit 29, # 14 Exhibit 30, # 15 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/17/2020)	
416	07/17/2020	REDACTION to 405 Sealed Response to Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of William J. Barrow, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/17/2020)	
417	07/17/2020	REDACTION to 401 Sealed Patent Response to Sealed Patent Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/17/2020)	
418	07/22/2020	SEALED PATENT REPLY to Response to PATENT Motion re 357 SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 4, # 3 Exhibit 5)(Smith, Melissa)	

#	Date	Proceeding Text	Source
		(Entered: 07/22/2020)	
419	07/22/2020	REPLY to Response to Motion re 363 MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS SURVEY EXPERT DR. TLIN ERDEM filed by Apple Inc. (Attachments: # 1 Affidavit Trac, # 2 Exhibit G)(Smith, Melissa) (Entered: 07/22/2020)	
420	07/22/2020	SEALED RESPONSE to Motion re 368 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit R, # 3 Exhibit S, # 4 Exhibit T, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/22/2020)	
421	07/22/2020	SEALED RESPONSE to Motion re 359 SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/22/2020)	
422	07/22/2020	SEALED RESPONSE to Motion re 372 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/22/2020)	
423	07/22/2020	SEALED PATENT REPLY to Response to PATENT Motion re 365 SEALED PATENT MOTION TO STRIKE PORTIONS OF MAXELLS OPENING EXPERT REPORTS THAT EXCEED THE SCOPE OF MAXELLS P.R. 3-1 INFRINGEMENT CONTENTIONS AND NEW EXPERT THEORIES OFFERED AFTER EXPERT REPORTS filed by Apple Inc. (Smith, Melissa) (Entered: 07/22/2020)	
424	07/22/2020	SEALED PATENT REPLY to Response to PATENT Motion re 362 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN filed by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit 31, # 3 Exhibit 32)(Smith, Melissa) (Entered: 07/22/2020)	
425	07/22/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 370 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G Part 1, # 9 Exhibit G Part 2, # 10 Exhibit H, # 11 Exhibit I, # 12 Exhibit J, # 13 Exhibit K, # 14 Text of Proposed Order)(Smith, Melissa) (Entered: 07/22/2020)	
426	07/22/2020	SEALED RESPONSE in Opposition to Defendant's Motion re 360 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell in Support of Opposition, # 2 Exhibit A to Declaration, #	

#	Date	Proceeding Text	Source
		3 Exhibit B to Declaration, # 4 Exhibit C to Declaration, # 5 Exhibit D to Declaration, # 6 Exhibit E to Declaration, # 7 Exhibit F to Declaration, # 8 Exhibit G to Declaration, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/22/2020)	
427	07/22/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 366 SEALED PATENT MOTION for Summary Judgment of No Invalidity Under 35 USC 102 and 103 of Claims 7, 16, and 17 of U.S. Patent No. 10,212,586 filed by Apple Inc. (Attachments: # 1 Affidavit Drummond Hansen, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Text of Proposed Order)(Smith, Melissa) (Entered: 07/22/2020)	
428	07/23/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 383 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art filed by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit 1, Pt. 1, # 3 Exhibit 1, Pt. 2, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Text of Proposed Order)(Smith, Melissa) (Entered: 07/23/2020)	
429	07/23/2020	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 382 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art filed by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Text of Proposed Order)(Smith, Melissa) (Entered: 07/23/2020)	
430	07/23/2020	SEALED REPLY to Response to Motion re 361 SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit I, # 3 Exhibit J, # 4 Exhibit K, # 5 Exhibit L)(Beaber, Jamie) (Entered: 07/23/2020)	
431	07/23/2020	SEALED REPLY to Response to Motion re 369 SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions filed by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 21, # 3 Exhibit 22, # 4 Exhibit 23, # 5 Exhibit 24, # 6 Exhibit 25, # 7 Exhibit 26, # 8 Exhibit 27)(Beaber, Jamie) (Entered: 07/23/2020)	
432	07/23/2020	REPLY to Response to Motion re 364 SEALED PATENT MOTION Maxell, LTD.'s Motion to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Report of Dr. Daniel A. Menasce Regarding Non-Infringement of U.S. Patent No. 6,329,794 for Offering Legal Opinions filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 07/23/2020)	
433	07/23/2020	SEALED PATENT REPLY to Response to PATENT Motion re 358 SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 6)(Smith, Melissa) (Entered: 07/23/2020)	
434	07/23/2020	SEALED PATENT REPLY to Response to PATENT Motion re 367 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE CONCLUSORY TESTIMONY AND OPINIONS OF MAXELLS EXPERTS RELATING TO DOCTRINE OF EQUIVALENTS AND SOURCE CODE filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 10)(Smith, Melissa) (Entered: 07/23/2020)	
435	07/24/2020	REDACTION to 420 Sealed Response to Motion, by Maxell Ltd..	

#	Date	Proceeding Text	Source
		(Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit R, # 3 Exhibit S, # 4 Exhibit T, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/24/2020)	
436	07/24/2020	REDACTION to 422 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/24/2020)	
437	07/24/2020	REDACTION to 426 Sealed Response to Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/24/2020)	
438	07/24/2020	REDACTION to 421 Sealed Response to Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of Clark S. Bakewell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/24/2020)	
439	07/24/2020	REDACTION to 424 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Westin, # 2 Exhibit 31, # 3 Exhibit 32)(Smith, Melissa) (Entered: 07/24/2020)	
440	07/24/2020	REDACTION to 418 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 4, # 3 Exhibit 5)(Smith, Melissa) (Entered: 07/24/2020)	
441	07/24/2020	REDACTION to 425 Sealed Patent Response to Sealed Patent Motion,, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Text of Proposed Order)(Smith, Melissa) (Entered: 07/24/2020)	
442	07/24/2020	REDACTION to 427 Sealed Patent Response to Sealed Patent Motion, by Apple Inc. (Attachments: # 1 Affidavit Drummond-Hansen, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Text of Proposed Order)(Smith, Melissa) (Entered: 07/24/2020)	
443	07/24/2020	REDACTION to 423 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Smith, Melissa) (Entered: 07/24/2020)	
445	07/24/2020	NOTICE by Maxell Ltd. re 210 Opposed SEALED MOTION for Sanctions Joint Report Regarding Maxwell's Motion for Sanctions (D.I.210) (Beaber, Jamie) (Entered: 07/24/2020)	
446	07/27/2020	REDACTION to 428 Sealed Patent Response to Sealed Patent Motion,, by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit 1, Pt. 1, # 3 Exhibit 1, Pt. 2, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Text of Proposed Order)(Smith, Melissa) (Entered: 07/27/2020)	
447	07/27/2020	REDACTION to 429 Sealed Patent Response to Sealed Patent Motion,, by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Text of Proposed Order)(Smith, Melissa) (Entered: 07/27/2020)	
448	07/27/2020	REDACTION to 433 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou,	

#	Date	Proceeding Text	Source
		# 2 Exhibit 6)(Smith, Melissa) (Entered: 07/27/2020)	
449	07/27/2020	REDACTION to 434 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 10)(Smith, Melissa) (Entered: 07/27/2020)	
450	07/27/2020	REDACTION to 430 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit I, # 3 Exhibit J, # 4 Exhibit K, # 5 Exhibit L)(Beaber, Jamie) (Entered: 07/27/2020)	
451	07/27/2020	REDACTION to 431 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 21, # 3 Exhibit 22, # 4 Exhibit 23, # 5 Exhibit 24, # 6 Exhibit 25, # 7 Exhibit 26, # 8 Exhibit 27)(Beaber, Jamie) (Entered: 07/27/2020)	
479	07/28/2020	Minute Entry for proceedings held before Magistrate Judge Caroline Craven: Motion Hearing held on 7/28/2020 re 210 Opposed SEALED MOTION for Sanctions filed by Maxell Ltd.. (Court Reporter Kate McAlpine.) (hma) (Entered: 08/03/2020)	
452	07/29/2020	REPLY to Response to Motion re 359 SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 filed by Apple Inc. (Attachments: # 1 Affidavit Liang, # 2 Exhibit N, # 3 Exhibit O, # 4 Exhibit P, # 5 Exhibit Q, # 6 Exhibit R)(Smith, Melissa) (Entered: 07/29/2020)	
453	07/29/2020	SUR-REPLY to Reply to Response to Motion re 363 MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS SURVEY EXPERT DR. TLIN ERDEM . MAXELL, LTD.'S SUR-REPLY IN OPPOSITION TO APPLE INC.'S DAUBERT MOTION filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 07/29/2020)	
454	07/29/2020	SEALED PATENT REPLY to Response to PATENT Motion re 368 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 filed by Apple Inc. (Smith, Melissa) (Entered: 07/29/2020)	
455	07/29/2020	SUR-REPLY to Reply to Response to Motion re 357 SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL . MAXELL, LTD.'S SUR-REPLY IN OPPOSITION OF APPLE'S MOTION filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 07/29/2020)	
456	07/30/2020	SEALED REPLY to Response to Motion re 366 SEALED PATENT MOTION for Summary Judgment of No Invalidity Under 35 USC 102 and 103 of Claims 7, 16, and 17 of U.S. Patent No. 10,212,586 filed by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit 5)(Beaber, Jamie) (Entered: 07/30/2020)	
457	07/30/2020	REPLY to Response to Motion re 382 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art filed by Maxell Ltd.. (Attachments: # 1 Declaration of Luiz Miranda, # 2 Exhibit 5)(Beaber, Jamie) (Entered: 07/30/2020)	
458	07/30/2020	REPLY to Response to Motion re 383 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 07/30/2020)	
459	07/30/2020	SEALED REPLY to Response to Motion re 370 SEALED PATENT	

#	Date	Proceeding Text	Source
		MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras filed by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit 12, # 3 Exhibit 13, # 4 Exhibit 14)(Beaber, Jamie) (Entered: 07/30/2020)	
460	07/30/2020	SEALED SUR-REPLY to Reply to Response to Motion re 362 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit 33)(Beaber, Jamie) (Entered: 07/30/2020)	
461	07/30/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 361 SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations filed by Apple Inc. (Smith, Melissa) (Entered: 07/30/2020)	
462	07/30/2020	SEALED SUR-REPLY to Reply to Response to Motion re 365 SEALED PATENT MOTION TO STRIKE PORTIONS OF MAXELLS OPENING EXPERT REPORTS THAT EXCEED THE SCOPE OF MAXELLS P.R. 3-1 INFRINGEMENT CONTENTIONS AND NEW EXPERT THEORIES OFFERED AFTER EXPERT REPORTS filed by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 8, # 3 Exhibit 9)(Beaber, Jamie) (Entered: 07/30/2020)	
463	07/30/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 369 SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 21, # 3 Exhibit 22, # 4 Exhibit 23)(Smith, Melissa) (Entered: 07/30/2020)	
464	07/30/2020	SEALED PATENT REPLY to Response to PATENT Motion re 360 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 filed by Apple Inc. (Smith, Melissa) (Entered: 07/30/2020)	
465	07/30/2020	SEALED PATENT REPLY to Response to PATENT Motion re 372 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 filed by Apple Inc. (Smith, Melissa) (Entered: 07/30/2020)	
466	07/31/2020	REDACTION to 454 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Smith, Melissa) (Entered: 07/31/2020)	
467	07/31/2020	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on July 15, 2020 Telephonic Hearing on Dkts. 341 & 307 before Judge Robert W. Schroeder, III. (Culbertson, Geoffrey) (Forwarded to Kate McAlpine on 7/31/2020) (ljw,). (Entered: 07/31/2020)	
468	07/31/2020	PAPER TRANSCRIPT REQUEST by Apple Inc for proceedings held on July 15, 2020 Motions Hearing before Judge Robert W. Schroeder, III. (Smith, Melissa) (Forwarded to Kate McAlpine on 7/31/2020) (ljw,). (Entered: 07/31/2020)	
469	07/31/2020	SEALED SUR-REPLY to Reply to Response to Motion re 358 SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction filed by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 9, # 3 Exhibit 10)(Beaber, Jamie) (Entered: 07/31/2020)	
470	07/31/2020	SEALED SUR-REPLY to Reply to Response to Motion re 367 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE	

#	Date	Proceeding Text	Source
		CONCLUSORY TESTIMONY AND OPINIONS OF MAXELLS EXPERTS RELATING TO DOCTRINE OF EQUIVALENTS AND SOURCE CODE filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 07/31/2020)	
471	07/31/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 364 SEALED PATENT MOTION Maxell, LTD.'s Motion to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Report of Dr. Daniel A. Menasce Regarding Non-Infringement of U.S. Patent No. 6,329,794 for Offering Legal Opinions filed by Apple Inc. (Smith, Melissa) (Entered: 07/31/2020)	
472	08/03/2020	REDACTION to 461 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion by Apple Inc. (Smith, Melissa) (Entered: 08/03/2020)	
473	08/03/2020	REDACTION to 463 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit 21, # 3 Exhibit 22, # 4 Exhibit 23)(Smith, Melissa) (Entered: 08/03/2020)	
474	08/03/2020	REDACTION to 464 Sealed PATENT Reply to Response to PATENT Motion, by Apple Inc. (Smith, Melissa) (Entered: 08/03/2020)	
475	08/03/2020	REDACTION to 465 Sealed PATENT Reply to Response to PATENT Motion by Apple Inc. (Smith, Melissa) (Entered: 08/03/2020)	
476	08/03/2020	REDACTION to 456 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit 5)(Beaber, Jamie) (Entered: 08/03/2020)	
477	08/03/2020	REDACTION to 459 Sealed Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Bryan Nese, # 2 Exhibit 12, # 3 Exhibit 13, # 4 Exhibit 14)(Beaber, Jamie) (Entered: 08/03/2020)	
478	08/03/2020	REDACTION to 460 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit 33)(Beaber, Jamie) (Entered: 08/03/2020)	
480	08/03/2020	REDACTION to 462 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 8, # 3 Exhibit 9)(Beaber, Jamie) (Entered: 08/03/2020)	
481	08/03/2020	SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Text of Proposed Order)(Smith, Melissa) (Entered: 08/03/2020)	
482	08/04/2020	REDACTION to 471 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion, by Apple Inc. (Smith, Melissa) (Entered: 08/04/2020)	
483	08/04/2020	REDACTION to 469 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit 9, # 3 Exhibit 10)(Beaber, Jamie) (Entered: 08/04/2020)	
484	08/04/2020	REDACTION to 470 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/04/2020)	
485	08/05/2020	REDACTION to 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit	

#	Date	Proceeding Text	Source
		G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Text of Proposed Order)(Smith, Melissa) (Entered: 08/05/2020)	
486	08/05/2020	SUR-REPLY to Reply to Response to Motion re 359 SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/05/2020)	
487	08/06/2020	SUR-REPLY to Reply to Response to Motion re 382 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art filed by Apple Inc. (Smith, Melissa) (Entered: 08/06/2020)	
488	08/06/2020	SUR-REPLY to Reply to Response to Motion re 383 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art filed by Apple Inc. (Smith, Melissa) (Entered: 08/06/2020)	
489	08/06/2020	SEALED SUR-REPLY to Reply to Response to Motion re 368 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/06/2020)	
490	08/06/2020	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 370 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras filed by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit L)(Smith, Melissa) (Entered: 08/06/2020)	
491	08/06/2020	SUR-REPLY to Reply to Response to Motion re 366 SEALED PATENT MOTION for Summary Judgment of No Invalidity Under 35 USC 102 and 103 of Claims 7, 16, and 17 of U.S. Patent No. 10,212,586 filed by Apple Inc. (Attachments: # 1 Affidavit Drummond, # 2 Exhibit 7)(Smith, Melissa) (Entered: 08/06/2020)	
492	08/07/2020	SUR-REPLY to Reply to Response to Motion re 360 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/07/2020)	
493	08/07/2020	SEALED SUR-REPLY to Reply to Response to Motion re 372 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/07/2020)	
494	08/10/2020	REDACTION to 490 Sealed PATENT Sur-Reply to Reply to Response to PATENT Motion, by Apple Inc. (Attachments: # 1 Affidavit Zhou, # 2 Exhibit L)(Smith, Melissa) (Entered: 08/10/2020)	
495	08/10/2020	ORDER (Jury Selection and Jury Trial RESET for 12/7/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Pretrial Conference RESET for 11/12/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.) The dispositive motions hearing will be held, as previously scheduled, on September 15, 2020. Signed by District Judge Robert W. Schroeder, III on 8/10/2020. (slo,) (Entered: 08/10/2020)	
496	08/10/2020	REDACTION to 489 Sealed Sur-Reply to Reply to Response to	

#	Date	Proceeding Text	Source
		Motion, by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/10/2020)	
498	08/10/2020	ORDER re 497 Sealed Order. The Court will allow the parties fourteen days from the date of entry of this Order in which to submit a proposed publicly-available redacted version of the Order. The parties shall redact only those portions of the Order with respect to which the parties have a legitimate and overriding business interest in maintaining confidentiality and shall be prepared to submit a particularized showing regarding those redactions in the event the Court finds it necessary. The parties shall advise the Court in writing if no redactions are necessary. Signed by Magistrate Judge Caroline Craven on 08/10/20. (lfs,) (Entered: 08/10/2020)	
499	08/11/2020	REDACTION to 493 Sealed Sur-Reply to Reply to Response to Motion by Maxell Ltd.. (Beaber, Jamie) (Entered: 08/11/2020)	
500	08/14/2020	Joint MOTION to Amend/Correct 495 Order,, Set Deadlines/Hearings, 283 Scheduling Order,,, Terminate Motions,, (Joint Motion to Partially Amend Docket Control Order) by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/14/2020)	
501	08/14/2020	Opposed SEALED PATENT MOTION FOR LEAVE TO EXTEND THE DEADLINE TO DEPOSE PATRICK MURPHY by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Smith, Melissa) (Entered: 08/14/2020)	
502	08/17/2020	AMENDED SCHEDULING ORDER:(Pretrial Conference set for 11/12/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Selection set for 12/7/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 12/7/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Dispositive Motion Hearing set for 9/15/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.), Motions terminated: 500 Joint MOTION to Amend/Correct 495 Order,, Set Deadlines/Hearings, 283 Scheduling Order,,, Terminate Motions,, (Joint Motion to Partially Amend Docket Control Order) filed by Maxell Ltd... Signed by District Judge Robert W. Schroeder, III on 08/17/20. (lfs,) (Entered: 08/17/2020)	
503	08/18/2020	REDACTION to 501 Opposed SEALED PATENT MOTION FOR LEAVE TO EXTEND THE DEADLINE TO DEPOSE PATRICK MURPHY by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Smith, Melissa) (Entered: 08/18/2020)	
504	08/18/2020	SEALED RESPONSE to Motion re 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit M, # 3 Exhibit N, # 4 Exhibit O, # 5 Exhibit P, # 6 Exhibit Q, # 7 Exhibit R, # 8 Exhibit S, # 9 Exhibit T, # 10 Exhibit U, # 11 Exhibit V, # 12 Exhibit W, # 13 Exhibit X, # 14 Exhibit Y, # 15 Exhibit Z, # 16 Exhibit AA, # 17 Exhibit BB, # 18 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/18/2020)	
505	08/20/2020	ORDER (Dispositive Motion Hearing RESET for 10/8/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.) Signed by District Judge Robert W. Schroeder, III on 8/20/2020. (slo,) (Entered: 08/20/2020)	
506	08/21/2020	REDACTION to 504 Sealed Response to Motion,, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit M, # 3 Exhibit N, # 4 Exhibit O, # 5 Exhibit P, # 6 Exhibit Q, # 7 Exhibit	

#	Date	Proceeding Text	Source
		R, # 8 Exhibit S, # 9 Exhibit T, # 10 Exhibit U, # 11 Exhibit V, # 12 Exhibit W, # 13 Exhibit X, # 14 Exhibit Y, # 15 Exhibit Z, # 16 Exhibit AA, # 17 Exhibit BB, # 18 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/21/2020)	
507	08/24/2020	***FILED IN ERROR. PLEASE IGNORE. ATTORNEY TO REFILE*** MOTION JOINT SUBMISSION REGARDING re 498 Order,, by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) Modified on 8/25/2020 (lfs,). (Entered: 08/24/2020)	
	08/25/2020	***FILED IN ERROR. Document # 507,. PLEASE IGNORE.*** (lfs,) (Entered: 08/25/2020)	
508	08/25/2020	MOTION JOINT SUBMISSION re 498 Order,, by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 08/25/2020)	
509	08/25/2020	ORDER granting 508 Submission of proposed redacted version of the Order denying Maxell, Ltd.'s Opposed Motion for Sanctions. Signed by Magistrate Judge Caroline Craven on 08/25/20. (lfs,) (Entered: 08/25/2020)	
510	08/25/2020	ORDER (Publicly-available redacted, and corrected, version of 497 Sealed Order. Signed by Magistrate Judge Caroline Craven on 08/10/20. (lfs,) (Main Document 510 replaced on 9/2/2020 per Order 526) (lfs,) (Entered: 08/25/2020)	
511	08/25/2020	REPLY to Response to Motion re 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Apple Inc. (Attachments: # 1 Affidavit Simmons, # 2 Exhibit CC, # 3 Exhibit DD)(Smith, Melissa) (Entered: 08/25/2020)	
512	08/28/2020	NOTICE of Attorney Appearance by Aaron Gabriel Fountain on behalf of Apple Inc (Fountain, Aaron) (Entered: 08/28/2020)	
513	08/28/2020	NOTICE of Attorney Appearance by Paul Richard Steadman on behalf of Apple Inc (Steadman, Paul) (Entered: 08/28/2020)	
514	08/29/2020	NOTICE of Attorney Appearance by Brent K Yamashita on behalf of Apple Inc (Yamashita, Brent) (Entered: 08/29/2020)	
515	08/29/2020	NOTICE of Attorney Appearance by Dawn Michelle Jenkins on behalf of Apple Inc (Jenkins, Dawn) (Entered: 08/29/2020)	
516	08/29/2020	NOTICE of Attorney Appearance by Christian Foster Chessman on behalf of Apple Inc (Chessman, Christian) (Entered: 08/29/2020)	
517	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Mark D Fowler on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976253. (Fowler, Mark) (Entered: 08/31/2020)	
518	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Sean C Cunningham on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976295. (Cunningham, Sean) (Entered: 08/31/2020)	
519	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Erin P Gibson on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976314. (Gibson, Erin) (Entered: 08/31/2020)	
520	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Stephanie Lim on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976363. (Lim, Stephanie) (Entered: 08/31/2020)	
521	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by David R Knudson on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976387. (Knudson, David) (Entered: 08/31/2020)	
522	08/31/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Kevin Hamilton on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7976416. (Hamilton, Kevin) (Entered: 08/31/2020)	

#	Date	Proceeding Text	Source
523	08/31/2020	RESPONSE in Opposition re 501 Opposed SEALED PATENT MOTION FOR LEAVE TO EXTEND THE DEADLINE TO DEPOSE PATRICK MURPHY filed by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/31/2020)	
524	09/01/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Michael D Jay on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7977424. (Jay, Michael) (Entered: 09/01/2020)	
525	09/01/2020	Joint MOTION TO SEAL AND FILE REDACTED ORDER re 510 Order by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Melissa) (Entered: 09/01/2020)	
526	09/02/2020	ORDER granting 525 Joint Motion to File Redacted Order. It is ORDERED that the Clerk shall replace Docket No. 510 with the document attached to the Joint Motion to File Redacted Order. Signed by Magistrate Judge Caroline Craven on 09/02/2020. (lfs,) (Entered: 09/02/2020)	
527	09/02/2020	SEALED SUR-REPLY to Reply to Response to Motion re 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit EE, # 3 Exhibit FF, # 4 Exhibit GG, # 5 Exhibit HH, # 6 Exhibit II, # 7 Exhibit JJ, # 8 Exhibit KK)(Beaber, Jamie) (Entered: 09/02/2020)	
528	09/03/2020	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on July 15,2020 before Judge Robert W. Schroeder, III. Court Reporter/Transcriber: Kate McAlpine,Telephone number: 903-794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 9/24/2020. Release of Transcript Restriction set for 12/2/2020. (kem,) (Entered: 09/03/2020)	
529	09/03/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Zachary A Loney on behalf of Apple Inc. Filing fee $ 100, receipt number 0540-7982578. (Loney, Zachary) (Entered: 09/03/2020)	
530	09/04/2020	REDACTION to 527 Sealed Sur-Reply to Reply to Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit EE, # 3 Exhibit FF, # 4 Exhibit GG, # 5 Exhibit HH, # 6 Exhibit II, # 7 Exhibit JJ, # 8 Exhibit KK)(Beaber, Jamie) (Entered: 09/04/2020)	
532	09/25/2020	NOTICE by Apple Inc of Compliance Regarding Pretrial Disclosures (Smith, Melissa) (Entered: 09/25/2020)	
533	09/25/2020	NOTICE by Maxell Ltd. re 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT (Notice of Supplemental Authority) (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 09/25/2020)	
534	09/25/2020	NOTICE by Maxell Ltd. Notice of Compliance Pretrial Disclosures (Culbertson, Geoffrey) (Entered: 09/25/2020)	
535	10/05/2020	NOTICE by Maxell Ltd. (Maxell, Ltd. and Apple Inc.'s Joint Notice Regarding Order of Presentation at Hearing on Dispositive Motions) (Beaber, Jamie) (Entered: 10/05/2020)	
536	10/06/2020	MOTION to Amend/Correct the Protective Order and for an Order of Discovery Under 28 USC Section 1782 by Maxell Ltd..	

#	Date	Proceeding Text	Source
		(Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/06/2020)	
537	10/08/2020	NOTICE by Apple Inc NOTICE OF REQUEST FOR DAILY TRIAL TRANSCRIPTS AND REAL TIME REPORTING (Smith, Melissa) (Entered: 10/08/2020)	
538	10/08/2020	NOTICE by Maxell Ltd. of Request for Daily Transcript and Real Time Reporting of Trial Proceedings (Beaber, Jamie) (Entered: 10/08/2020)	
539	10/08/2020	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 10/8/2020 re 362 SEALED PATENT MOTION DAUBERT MOTION TO EXCLUDE THE OPINIONS AND TESTIMONY OF PLAINTIFFS DAMAGES EXPERT MS. CARLA MULHERN filed by Apple Inc, 370 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent No. 8,339,493 in View of the Sony MVC-FD83 and MVC-FD88 Cameras filed by Maxell Ltd., 368 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT LIMITING MAXELLS CLAIM FOR DAMAGES FOR THE 999, 498, 493, AND 317 PATENTS UNDER 35 U.S.C. § 287(a) AND FOR NO ENHANCED DAMAGES UNDER 35 U.S.C. § 284 filed by Apple Inc, 361 SEALED PATENT MOTION Maxell Motion to Strike Gunderson Use of Offers Made in Licensing Negotiations filed by Maxell Ltd., 383 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the NavTalk Alleged Prior Art filed by Maxell Ltd., 359 SEALED PATENT MOTION MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,748,317, 6,430,498, AND 6,580,999 filed by Apple Inc, 357 SEALED PATENT MOTION TO EXCLUDE THE TESTIMONY OF ROBERT L. STOLL filed by Apple Inc, 382 SEALED PATENT MOTION for Partial Summary Judgment of No Invalidity of U.S. Patent Nos. 6,748,317, 6,580,999, and 6,430,498 in View of the Abowd and Cyberguide Alleged Prior Art filed by Maxell Ltd., 358 SEALED PATENT MOTION to Exclude Testimony and Opinions of Maxells Experts for Improper Application of the Courts Claim Construction filed by Apple Inc, 481 SEALED PATENT MOTION RENEWED MOTION TO STAY PENDING DETERMINATION OF INTER PARTES REVIEW OF THE PATENTS-IN-SUIT filed by Apple Inc, 369 SEALED PATENT MOTION to Strike Portions of Defendant Apple Inc.'s Rebuttal Expert Reports Based on Untimely Claim Construction Positions filed by Maxell Ltd., 372 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF NON-INFRINGEMENT OF U.S. PATENT NOS. 10,084,991 AND 8,339,493 filed by Apple Inc, 360 SEALED PATENT MOTION FOR PARTIAL SUMMARY JUDGMENT OF SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101 FOR U.S. PATENT NOS. 6,928,306 AND 6,329,794 filed by Apple Inc. (Court Reporter Kate McAlpine) (bas) (Entered: 10/08/2020)	
540	10/12/2020	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on October 8, 2020 Dispositive Motions Hearing before Judge Robert W. Schroeder, III. (Culbertson, Geoffrey) (Forwarded to Kate McAlpine on 10/13/2020) (ljw,). (Entered: 10/12/2020)	
541	10/20/2020	PAPER TRANSCRIPT REQUEST by Apple Inc for proceedings held on 10/8/2020 before Judge Robert W. Schroeder, III. (Jay, Michael) (Forwarded to Kate McAlpine on 10/20/2020) (ljw,). (Entered: 10/20/2020)	
542	10/21/2020	Joint MOTION to Amend/Correct 502 Scheduling Order,,,, Terminate Motions,,, by Maxell Ltd.. (Attachments: # 1 Text of	

#	Date	Proceeding Text	Source
		Proposed Order)(Beaber, Jamie) (Entered: 10/21/2020)	
543	10/21/2020	RESPONSE in Opposition re 536 MOTION to Amend/Correct the Protective Order and for an Order of Discovery Under 28 USC Section 1782 filed by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Text of Proposed Order)(Smith, Melissa) (Entered: 10/21/2020)	
544	10/22/2020	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 10/08/2020 before Judge Robert W. Schroeder, III. Court Reporter/Transcriber: Kate McAlpine,Telephone number: 903-794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 11/12/2020. Release of Transcript Restriction set for 1/20/2021. (kem,) (Entered: 10/22/2020)	
545	10/22/2020	AMENDED DOCKET CONTROL ORDER:(Pretrial Conference set for 11/12/2020 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Selection set for 12/7/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Jury Trial set for 12/7/2020 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III., Proposed Pretrial Order due by 10/22/2020.), Motions terminated: 542 Joint MOTION to Amend/Correct 502 Scheduling Order,,,, Terminate Motions,,, filed by Maxell Ltd. Signed by District Judge Robert W. Schroeder, III on 10/22/20. (lfs,) (Entered: 10/22/2020)	
546	10/22/2020	Sealed Joint Final Pre-trial Order. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G)(Beaber, Jamie) (Entered: 10/22/2020)	
547	10/22/2020	Opposed SEALED MOTION Motions in Limine by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit A to Gelsleichter Declaration, # 3 Exhibit B to Gelsleichter Declaration, # 4 Exhibit C to Gelsleichter Declaration, # 5 Exhibit D to Gelsleichter Declaration, # 6 Exhibit E to Gelsleichter Declaration, # 7 Exhibit F to Gelsleichter Declaration, # 8 Exhibit G to Gelsleichter Declaration, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/22/2020)	
548	10/22/2020	Opposed SEALED PATENT MOTION IN LIMINE by Apple Inc. (Attachments: # 1 Affidavit M. Jay, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Text of Proposed Order)(Smith, Melissa) (Entered: 10/22/2020)	
549	10/26/2020	REDACTION to 547 Opposed SEALED MOTION Motions in Limine by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit A to Gelsleichter Declaration, # 3 Exhibit B to Gelsleichter Declaration, # 4 Exhibit C to Gelsleichter Declaration, # 5 Exhibit D to Gelsleichter Declaration, # 6 Exhibit E to Gelsleichter Declaration, # 7 Exhibit F to Gelsleichter Declaration, # 8 Exhibit G to Gelsleichter Declaration, # 9 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/26/2020)	
550	10/26/2020	REDACTION to 548 Opposed SEALED PATENT MOTION IN LIMINE by Apple Inc. (Attachments: # 1 Affidavit M. Jay, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Text of Proposed Order)(Smith, Melissa) (Entered: 10/26/2020)	
551	10/26/2020	REDACTION to 546 Sealed Document by Maxell Ltd..	

#	Date	Proceeding Text	Source
		(Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G)(Beaber, Jamie) (Entered: 10/26/2020)	
552	10/28/2020	NOTICE of Intent to Request Redaction by Jamie B Beaber re 544 Transcript,,,. (Beaber, Jamie) (Entered: 10/28/2020)	
553	10/28/2020	NOTICE of Intent to Request Redaction by Harry Lee Gillam, Jr re 544 Transcript,,,. (Gillam, Harry) (Entered: 10/28/2020)	
554	10/28/2020	MOTION to Disqualify Counsel DLA Piper LLP (US) by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/28/2020)	
555	10/29/2020	Unopposed MOTION for Leave to File a Reply in Support of its Motion to Amend the Protective Order and for an Order of Discovery Under 28 U.S.C. § 1782 by Maxell Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 10/29/2020)	
556	10/29/2020	REPLY to Response to Motion re 536 MOTION to Amend/Correct the Protective Order and for an Order of Discovery Under 28 USC Section 1782 filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 10/29/2020)	
557	10/30/2020	ORDER granting 555 Unopposed Motion for Leave to File a Reply in Support of its Motion to Amend the Protective Order and for an Order of Discovery 28 U.S.C. § 1782. Signed by District Judge Robert W. Schroeder, III on 10/30/2020. (slo,) (Entered: 10/30/2020)	
558	11/02/2020	ORDER. Before the Court is Plaintiff Maxells Motion to Disqualify Counsel DLA Piper LLP (US)(Docket No. 554). Because of the late stage of this action and the upcoming pretrial conference, the Court hereby ORDERS Defendant Apple Inc., to file its response to the motion by November 9, 2020. Failure to respond shall indicate that Apple does not oppose the relief requested.L.R. CV-7(d). Maxell shall file its reply, if any, by November 11, 2020. Signed by District Judge Robert W. Schroeder, III on 11/2/20. (lfs,) (Entered: 11/02/2020)	
559	11/03/2020	NOTICE by Maxell Ltd. Joint Notice of Parties' Verdict Form and Jury Instructions (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Beaber, Jamie) (Entered: 11/03/2020)	
560	11/03/2020	Sealed Pretrial Objections. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Beaber, Jamie) (Entered: 11/03/2020)	
561	11/03/2020	Sealed Document. Apple's Pretrial Disclosures. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C)(Fowler, Mark) (Entered: 11/03/2020)	
562	11/05/2020	REDACTION to 560 Sealed Document by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Beaber, Jamie) (Entered: 11/05/2020)	
563	11/05/2020	SEALED RESPONSE to Motion re 547 Opposed SEALED MOTION Motions in Limine filed by Apple Inc. (Attachments: # 1 Declaration of D. Jenkins, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Gillam, Harry) (Entered: 11/05/2020)	
564	11/05/2020	SEALED RESPONSE to Motion re 548 Opposed SEALED PATENT MOTION IN LIMINE filed by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Geisleichter, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/05/2020)	
565	11/05/2020	REDACTION to 561 Sealed Document by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C)(Fowler, Mark) (Entered: 11/05/2020)	

#	Date	Proceeding Text	Source
566	11/05/2020	NOTICE by Maxell Ltd. Maxell Notice of Jury Selection and Trial Time Requested (Beaber, Jamie) (Entered: 11/05/2020)	
567	11/05/2020	NOTICE by Apple Inc Notice of Time Requested for Trial (Gillam, Harry) (Entered: 11/05/2020)	
568	11/06/2020	NOTICE of Attorney Appearance - Pro Hac Vice by Kevin S Rosen on behalf of Apple. Filing fee $ 100, receipt number 0540-8094564. (Rosen, Kevin) Modified on 11/6/2020 (lfs,). (Entered: 11/06/2020)	
569	11/06/2020	***FILED IN ERROR BY ATTORNEY. PLEASE IGNORE***NOTICE of Attorney Appearance by Ashley Elizabeth Johnson on behalf of DLA Piper USA LLP (Johnson, Ashley) Modified on 11/6/2020 (lfs,). (Entered: 11/06/2020)	
570	11/09/2020	NOTICE by Maxell Ltd. Joint Notice of Parties' Juror Questionnaire (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 11/09/2020)	
571	11/09/2020	NOTICE of Attorney Appearance by John T Cox, III on behalf of Apple Inc (Cox, John) (Entered: 11/09/2020)	
572	11/09/2020	***FILED IN ERROR BY ATTORNEY. PLEASE IGNORE*** MOTION to Strike 554 MOTION to Disqualify Counsel DLA Piper LLP (US) by Apple Inc. (Cox, John) Modified on 11/9/2020 (lfs,). (Entered: 11/09/2020)	
573	11/09/2020	REDACTION to 563 Sealed Response to Motion, Motions in Limine by Apple Inc. (Attachments: # 1 Declaration of D. Jenkins, # 2 Exhibit 2, # 3 Text of Proposed Order)(Gillam, Harry) (Entered: 11/09/2020)	
574	11/09/2020	REDACTION to 564 Sealed Response to Motion, by Maxell Ltd.. (Attachments: # 1 Declaration of Alison T. Gelsleichter, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/09/2020)	
575	11/09/2020	ORDER Setting Hearing on Motion 554 MOTION to Disqualify Counsel DLA Piper LLP (US) : Motion Hearing set for 11/12/2020 immediately following the previously scheduled pretrial conference in (Texarkana) before District Judge Robert W. Schroeder III. Signed by District Judge Robert W. Schroeder, III on 11/9/2020. (slo,) (Entered: 11/09/2020)	
576	11/09/2020	RESPONSE in Opposition re 554 MOTION to Disqualify Counsel DLA Piper LLP (US) filed by Apple Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19, # 20 Exhibit 20, # 21 Exhibit 21, # 22 Exhibit 22, # 23 Exhibit 23, # 24 Exhibit 24, # 25 Exhibit 25, # 26 Exhibit 26, # 27 Exhibit 27, # 28 Exhibit 28, # 29 Exhibit 29, # 30 Exhibit 30, # 31 Exhibit 31, # 32 Exhibit 32, # 33 Exhibit 33, # 34 Exhibit 34, # 35 Exhibit 35, # 36 Exhibit 36, # 37 Text of Proposed Order Proposed Order)(Cox, John) (Entered: 11/09/2020)	
577	11/11/2020	MOTION to Strike 554 MOTION to Disqualify Counsel DLA Piper LLP (US) DLA Piper LLP (US)'s Motion to Strike Certain Portions of Jamie B. Beaber's Declaration in Support of Maxell's Motion to Disqualify by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Cox, John) (Entered: 11/11/2020)	
578	11/11/2020	NOTICE by Maxell Ltd. Joint Notice Regarding Pretrial Objections (Beaber, Jamie) (Entered: 11/11/2020)	
579	11/11/2020	RESPONSE in Opposition re 577 MOTION to Strike 554 MOTION to Disqualify Counsel DLA Piper LLP (US) DLA Piper LLP (US)'s Motion to Strike Certain Portions of Jamie B. Beaber's Declaration in Support of Maxell's Motion to Disqualify filed by Maxell Ltd.. (Attachments: # 1 Proposed Order)(Beaber, Jamie) (Entered:	

#	Date	Proceeding Text	Source
		11/11/2020)	
580	11/11/2020	REPLY to Response to Motion re 554 MOTION to Disqualify Counsel DLA Piper LLP (US) (Maxell, LTD.'s Reply in Support of its Motion to Disqualify DLA Piper LLP (US)) filed by Maxell Ltd.. (Beaber, Jamie) (Entered: 11/11/2020)	
581	11/12/2020	Joint SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/12/2020)	
582	11/12/2020	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 11/12/2020 re 547 Opposed SEALED MOTION Motions in Limine filed by Maxell Ltd., 548 Opposed SEALED PATENT MOTION IN LIMINE filed by Apple Inc. and 554 MOTION to Disqualify Counsel DLA Piper LLP (US) filed by Maxell Ltd.. (Court Reporter Kate McAlpine) (bas) (Entered: 11/12/2020)	
583	11/13/2020	PAPER TRANSCRIPT REQUEST by Apple Inc for proceedings held on 11/12/2020 before Judge Robert W. Schroeder, III. (Cunningham, Sean) (Forwarded to Kate McAlpine on 11/16/2020) (ijw,). (Entered: 11/13/2020)	
584	11/13/2020	PAPER TRANSCRIPT REQUEST by Maxell Ltd. for proceedings held on 11/12/2020 before Judge Robert W. Schroeder, III. (Culbertson, Geoffrey) (Forwarded to Kate McAlpine on 11/16/2020)(ijw,). (Entered: 11/13/2020)	
585	11/13/2020	REDACTION to 581 Joint SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 11/13/2020)	
587	11/17/2020	ORDER denying 481 Sealed Patent Motion. Signed by District Judge Robert W. Schroeder, III on 11/17/20. (lfs,) (Entered: 11/17/2020)	
588	11/17/2020	ORDER GRANTING 585 Joint Motion for Additonal Redactions or Sealing filed by Maxell Ltd. Signed by District Judge Robert W. Schroeder, III on 11/17/20. (lfs,) (Entered: 11/17/2020)	
589	11/18/2020	ORDER. On November 17, 2020, the Court issued a sealed order ruling on the parties various dispositive motions (Docket No. 586). Within 14 days of the issuance of this order, the parties shall jointly submit a proposed redacted version of the sealed order (Docket No. 586) so that a public version can be made available. Signed by District Judge Robert W. Schroeder, III on 11/18/20. (lfs,) (Entered: 11/18/2020)	
590	11/24/2020	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 11/12/2020 before Judge Robert W. Schroeder, III. Court Reporter/Transcriber: Kate McAlpine, kate_mcalpine@txed.uscourts.gov,Telephone number: 903-794-1018. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 12/15/2020. Release of Transcript Restriction set for 2/22/2021. (kem,) (Entered: 11/24/2020)	
591	12/01/2020	NOTICE of Intent to Request Redaction by Jamie B Beaber re 590 Transcript,,,. (Beaber, Jamie) (Entered: 12/01/2020)	
592	12/01/2020	NOTICE of Intent to Request Redaction by Michael D Jay re 590 Transcript,,,. (Jay, Michael) (Entered: 12/01/2020)	

#	Date	Proceeding Text	Source
593	12/01/2020	ORDER resetting Jury Selection and Trial. Jury selection and trial in this matter is hereby RESET for March 22, 2021, at 9 a.m. An additional final pretrial conference, if necessary, shall be set on a date to be determined by the Court. The Court directs the parties to promptly meet and confer regarding any remaining pretrial matters to be resolved, including a schedule for resolving objections to exhibits and deposition designations, or any other necessary modifications to the case schedule by filing a jointly proposed motion to amend the docket control order or other motion practice as the circumstances might require. Such should occur within 21 days of this order. Signed by District Judge Robert W. Schroeder, III on 12/1/20. (lfs,) (Entered: 12/01/2020)	
594	12/02/2020	REDACTION Joint Submission Regarding D.I. 586 by Maxell Ltd.. (Attachments: # 1 Exhibit A)(Beaber, Jamie) (Entered: 12/02/2020)	
595	12/04/2020	Unopposed MOTION to Withdraw as Attorney Willian R. Lamb by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Melissa) (Entered: 12/04/2020)	
596	12/08/2020	ORDER granting 595 Motion to Withdraw as Attorney. It is therefore ORDERED that William R. Lamb of Gillam & Smith LLP is relieved from any further responsibilities as attorney of record on behalf of Defendant Apple Inc. It is further ORDERED that the Clerk of Court terminate any further ECF notices to William R. Lamb in this action. Signed by District Judge Robert W. Schroeder, III on 12/8/20. (lfs,) (Entered: 12/08/2020)	
597	12/11/2020	Opposed SEALED MOTION for Clarification of Order by Apple Inc. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Gillam, Harry) (Entered: 12/11/2020)	
598	12/15/2020	Joint SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/15/2020)	
599	12/17/2020	REDACTION to 586 Sealed Order. (lfs,) (Entered: 12/17/2020)	
600	12/17/2020	REDACTION to 598 Joint SEALED MOTION for Additional Redactions or Sealing by Maxell Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/17/2020)	
601	12/17/2020	REDACTION to 597 Opposed SEALED MOTION for Clarification of Order by Apple Inc. (Attachments: # 1 Text of Proposed Order)(Gillam, Harry) (Entered: 12/17/2020)	
602	12/21/2020	MOTION in Limine by Maxell Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 12/21/2020)	
603	12/22/2020	STATUS REPORT JOINT STATUS REPORT REGARDING FRAMEWORK TO NARROW ISSUES FOR TRIAL by Maxell Ltd.. (Beaber, Jamie) (Entered: 12/22/2020)	

Patents

Number	Title	Issued	Class	Subclass
6,748,317	Portable terminal with the function of walking navigation	06/08/2004	701	433
8,339,493	Electric camera	12/25/2012	348	294
7,116,438	Terminal for information processing	10/03/2006	358	1.15

Number	Title	Issued	Class	Subclass
6,408,193	Cellular telephone	06/18/2002	455	571
6,928,306	Portable mobile unit	08/09/2005	455	567
6,329,794	Information processing device and method for controlling power consumption thereof	12/11/2001	320	132

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End of Document

User Name: Renee Preston
Date and Time: Tuesday, December 22, 2020 4:16:00 PM EST
Job Number: 132758065

Document (1)

1. *IPR2020-00597 Apple Inc. Vs. Maxell, Ltd.*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2020-00597, Apple Inc. Vs. Maxell, Ltd.

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 12/22/2020

Header

Case Number: IPR2020-00597
Date Filed: 03/17/2020
Date Full Case Retrieved: 12/22/2020
Status: Open
Misc: (0) Unknown; Civil

Summary

Court Case Status: Institution Denied
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 2020-09-24
Technical Center Number: 2600
Patent Application Number: 12845266
Patent Number: 8339493

Participants

Litigants	Attorneys
Apple Inc. **Petitioner** Maxell, Ltd. **PatentOwner**	

Proceedings

Date	#	Proceeding Text	Details
03/17/2020		EX1001-U.S. Patent No. 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1001

Renee Preston

Date	#	Proceeding Text	Details
			Public? Yes
03/17/2020		EX1002-File History of U.S. Patent No. 8,339,493	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
03/17/2020		EX1007-Part 3-Declaration of David Etchells	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
03/17/2020		EX1004-Part 1-Casio LCD Digital Camera QV-8000SX Users Guide	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
03/17/2020		EX1004-Part 2 - Casio LCD Digital Camera QV-8000SX Users Guide	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
03/17/2020		EX1004-Part 3 - Casio LCD Digital Camera QV-8000SX Users Guide	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
03/17/2020		EX1005-U.S. Patent No. 7,903,162 to Juen	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
03/17/2020		EX1006-U.S. Patent No. 5,502,483 to Takase, et al.	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1006 Public? Yes
03/17/2020		EX1007-Part 1-Declaration of David Etchells	Filed By:

Date	#	Proceeding Text	Details
			petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
03/17/2020		EX1007-Part 2-Declaration of David Etchells	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
03/17/2020		EX1007-Part 4-Declaration of David Etchells	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
03/17/2020		EX1010-Complaint for Patent Infringement, Maxell Ltd. v. Apple Inc, No. 5:19-cv-0036-RWS (E.D. Tex. Mar. 15, 2019), ECF No. 1	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010 Public? Yes
03/17/2020		EX1011-P.R. 4-3 Joint Claim Construction and Prehearing Statement (Docket No. 99), from Maxell, Ltd. v. Apple Inc., 5:19-cv-00036-RWS (E.D. Tex. Oct. 16, 2019)	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1011 Public? Yes
03/17/2020		EX1019-EP 0 802 688 B1 to Inoue	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1019 Public? Yes
03/17/2020		EX1022-U.S. Patent No. 4,612,575 to Ishman	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1022 Public? Yes
03/17/2020		EX1025-U.S. Patent No. 6,067,071 to Kotha	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No:

Date	#	Proceeding Text	Details
			1025 Public? Yes
03/17/2020		EX1027-Declaration of Grace Siller	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1027 Public? Yes
03/17/2020		EX1028-Declaration of Susan VanderSchans	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1028 Public? Yes
03/17/2020		EX1007-Part 5-Declaration of David Etchells	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
03/17/2020		EX1008-U.S. Patent No. 5,444,482 to Misawa, et al.	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
03/17/2020		EX1009-Docket Control Order, Maxell Ltd. v. Apple Inc, No. 5:19-cv-0036-RWS (E.D. Tex. July 9, 2019), ECF No. 46	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1009 Public? Yes
03/17/2020		EX1012-U.S. Patent No. 4,949,117 to Heyningen	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
03/17/2020		EX1013-U.S. Patent No. 5,150,109 to Berry	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes

Date	#	Proceeding Text	Details
03/17/2020		EX1014-U.S. Patent No. 6,335,760 to Sato	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
03/17/2020		EX1015-U.S. Patent No. 5,642,171 to Baumgartner	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015 Public? Yes
03/17/2020		EX1016-CCD Arrays, Cameras, and Displays, 2d. Ed. (JCD Publ. 1998)	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1016 Public? Yes
03/17/2020		EX1017-U.S. Patent No. 4,740,828 to Kinoshita	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1017 Public? Yes
03/17/2020		EX1018-U.S. Patent No. 6,018,363 to Horii	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1018 Public? Yes
03/17/2020		EX1020-U.S. Patent No. 6,512,541 to Dunton	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1020 Public? Yes
03/17/2020		EX1021-U.S. Patent No. 6,563,535 to Anderson	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1021 Public? Yes
03/17/2020		EX1023-File History for U.S. Application Serial No. 15/959,774	Filed By: petitioner Document Type: EXHIBITS

Date	#	Proceeding Text	Details
			Paper/Exhibit No: 1023 Public? Yes
03/17/2020		EX1024-File History for U.S. Application Serial No. 15/386,656	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1024 Public? Yes
03/17/2020		EX1026-Declaration of Edward Lang	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1026 Public? Yes
03/17/2020		EX1029-VHS Camcoder with Electronic Image Stabilizer, Ohima, et al., IEEE Trans, on CE, Vol. 35, No. 4 (Nov. 1989), pp. 749-757	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1029 Public? Yes
03/17/2020		Petition For Inter Partes Review of US Patent No 8339493	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public? Yes
03/17/2020		Petitioners Power of Attorney Pursuant to 37 CFR 42.10(b) for Petition For Inter Partes Review	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
03/17/2020		EX1003-Declaration of Dr. Jeffrey J. Rodriguez	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
03/25/2020		Notice of Accord Filing Date	Filed By: board Document Type: PAPER Paper/Exhibit No: 3 Public? Yes

Date	#	Proceeding Text	Details
04/07/2020		IPR2020-00597 Patent Owner's Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
04/07/2020		IPR2020-00597 Patent Owner's Mandatory Notices	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
06/25/2020		IPR2020-00597 Patent Owner's Preliminary Response	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? Yes
06/25/2020		Ex. 2002 - 2019.08.14 Apple's Invalidity Contentions	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2002 Public? Yes
06/25/2020		Ex. 2004 - Apple Motion for Leave with Gibson Declaration	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2004 Public? Yes
06/25/2020		Ex. 2007 - 2020.04.07 Apple's Final Election of Prior Art	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2007 Public? Yes
06/25/2020		Ex. 2011 - Markman Minute Order	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2011 Public? Yes
06/25/2020		Ex. 2015 - Amended Docket Control Order	Filed By: patentowner Document Type: EXHIBITS

Date	#	Proceeding Text	Details
			Paper/Exhibit No: 2015 Public? Yes
06/25/2020		Ex. 2016 - Declaration of Tiffany Miller	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2016 Public? Yes
06/25/2020		Ex. 2017 - Notices of Compliance	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2017 Public? Yes
06/25/2020		Ex. 2018 - COVID19 Standing Order	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2018 Public? Yes
06/25/2020		Ex. 2019 - District Court Docket (June 24)	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2019 Public? Yes
06/25/2020		Ex. 2022 - IPR2018-00236 Decision Denying Institution final	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2022 Public? Yes
06/25/2020		Ex. 2023 - IPR2018-00904 Preliminary Response (493 Patent)	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2023 Public? Yes
06/25/2020		Ex. 2024 - 2018.10.09 - Letter from Beaber to Apple	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2024 Public? Yes

Date	#	Proceeding Text	Details
06/25/2020		Ex. 2001 - ((-036 Apple) 2019.05.31 [030] Scheduling Order)	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2001 Public? Yes
06/25/2020		Ex. 2003 - 2020.03.04 Apple's Amended Invalidity Contentions	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2003 Public? Yes
06/25/2020		Ex. 2005 - Opposition to Motion for leave	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2005 Public? Yes
06/25/2020		Ex. 2006 - Order Granting Supplemental Invalidity Contentions	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2006 Public? Yes
06/25/2020		Ex. 2008 - Excerpts Opening Expert Report - Bovik	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2008 Public? Yes
06/25/2020		Ex. 2009 - Defendant's Invalidity Contentions - Ex. B11	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2009 Public? Yes
06/25/2020		Ex. 2010 - Defendant's Invalidity Contentions - Exhibit B13	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2010 Public? Yes
06/25/2020		Ex. 2012 - Motion to Dismiss Minute Order	Filed By: patentowner Document Type: EXHIBITS

Date	#	Proceeding Text	Details
			Paper/Exhibit No: 2012 Public? Yes
06/25/2020		Ex. 2013 - Motion to Transfer Minute Order	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2013 Public? Yes
06/25/2020		Ex. 2014 - (-036 Apple) 2020.03.18 [235] Claim Construction Memorandum and Order	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2014 Public? Yes
06/25/2020		Ex. 2020 - Order Denying [239] Apple's Motion to Stay	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2020 Public? Yes
06/25/2020		Ex. 2021 - 2018.03.05 - Patent Owner's Preliminary Response - 493 Patent	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2021 Public? Yes
06/25/2020		Ex. 2025 - US Patent 5828406	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2025 Public? Yes
06/25/2020		Ex. 2026 - Mansoorian Declaration re '493 IPR Petition Signed	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2026 Public? Yes
06/25/2020		Ex. 2027 - 2018.05.17 Letter to Apple	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2027 Public? Yes

Date	#	Proceeding Text	Details
06/25/2020		Ex. 2028 - Casio Document Subpoena	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2028 Public? Yes
06/25/2020		Ex. 2029 - 2020.01.08 Casio Objections and Response to Document Subpoena	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2029 Public? Yes
06/25/2020		Ex. 2030 - IR Calendar Investor Relations CASIO	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2030 Public? Yes
07/20/2020		EX1053-Maxells Final Election of Asserted Claims	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1053 Public? Yes
07/20/2020		EX1057-Maxells June 12, 2019, Infringement Contentions	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1057 Public? Yes
07/20/2020		EX1060-Maxells Summary Judgment Motion on the 493 Patent	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1060 Public? Yes
07/20/2020		EX1061-W.D.Tex. Order Canceling Trials Due to Pandemic	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1061 Public? Yes
07/20/2020		EX1062-MV3 v. Roku ?????? Docket Sheet Showing Delayed Trial Due to Pandemic	Filed By: petitioner Document Type: EXHIBITS

Date	#	Proceeding Text	Details
			Paper/Exhibit No: 1062 Public? Yes
07/20/2020		Petitioner Apple Incs Preliminary Reply	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 7 Public? Yes
07/20/2020		EX1047-Apples Final Election of Prior Art	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1047 Public? Yes
07/20/2020		EX1052-Order Denying Motion to Stay Without Prejudice	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1052 Public? Yes
07/20/2020		EX1056-Boards Email Authorizing Reply	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1056 Public? Yes
07/20/2020		EX1058-Apples Expert Report on Invalidity for the 493 Patent	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1058 Public? Yes
07/20/2020		EX1059-New Report on COVID-19 Cases in Texas	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1059 Public? Yes
07/20/2020		EX1063-N.D.Ill. Order Canceling Trials Due to Pandemic	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1063 Public? Yes

Date	#	Proceeding Text	Details
07/31/2020		IPR2020-00597 Patent Owner's Preliminary Sur-reply (493)	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
07/31/2020		Ex. 2031 - OPTIS v. Apple - Order	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2031 Public? Yes
07/31/2020		Ex. 2032 - District Court Docket (July 31)	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2032 Public? Yes
09/24/2020		Exhibit 3001	Filed By: board Document Type: EXHIBITS Paper/Exhibit No: 3001 Public? Yes
09/24/2020		Trial Instituted Document	Filed By: board Document Type: PAPER Paper/Exhibit No: 9 Public? Yes
10/06/2020		Petitioners Notice of Appeal	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes

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*** THIS DATA IS FOR INFORMATIONAL PURPOSES ONLY ***

End of Document



User Name: Renee Preston
Date and Time: Tuesday, December 22, 2020 4:07:00 PM EST
Job Number: 132757334

Document (1)

1. *5:16cv179, Maxell, Ltd. V. Zte Corporation Et Al*
   Client/Matter: -None-
   Search Terms: 8339493 or 8,339,493
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

5:16cv179, Maxell, Ltd. V. Zte Corporation Et Al

US District Court Docket

US District Court for the Eastern District of Texas

(Texarkana)

This case was retrieved on 12/22/2020

Header

Case Number: 5:16cv179
Date Filed: 11/18/2016
Assigned To: District Judge Robert W. Schroeder, III
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: None
Jurisdiction: Federal Question

Class Code: Closed
Closed: 03/12/2019
Statute: 15:1126
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

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Proceedings

#	Date	Proceeding Text	Source
1	11/18/2016	COMPLAINT against All Defendants (Filing fee $ 400 receipt number 0540-6038006.), filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Civil Cover Sheet Civil Cover Sheet, # 2 Exhibit Exhibit A, # 3 Exhibit Exhibit B, # 4 Exhibit Exhibit C, # 5 Exhibit Exhibit D, # 6 Exhibit Exhibit E, # 7 Exhibit Exhibit F, # 8 Exhibit Exhibit G, # 9 Exhibit Exhibit H)(Culbertson, Geoffrey) (Entered: 11/18/2016)	
2	11/18/2016	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Attachments: # 1 Supplement Page 2 to Main Document)(Culbertson, Geoffrey) (Entered: 11/18/2016)	
	11/21/2016	Case assigned to Judge Robert W. Schroeder, III. (ch,) (Entered: 11/21/2016)	

#	Date	Proceeding Text	Source
	11/21/2016	In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice Regarding Consent to Proceed Before Magistrate Judge. (ch,) (Entered: 11/21/2016)	
3	11/21/2016	SUMMONS Issued as to ZTE USA Inc.. (ch,) (Entered: 11/21/2016)	
4	11/22/2016	NOTICE of Attorney Appearance by Jamie B Beaber on behalf of Hitachi Maxell, Ltd. (Beaber, Jamie) (Entered: 11/22/2016)	
5	11/22/2016	NOTICE of Attorney Appearance by Amanda Kay Streff on behalf of Hitachi Maxell, Ltd. (Streff, Amanda) (Entered: 11/22/2016)	
6	11/22/2016	NOTICE of Attorney Appearance by Saqib Javaid Siddiqui on behalf of Hitachi Maxell, Ltd. (Siddiqui, Saqib) (Entered: 11/22/2016)	
7	11/22/2016	NOTICE of Attorney Appearance by James A Fussell, III on behalf of Hitachi Maxell, Ltd. (Fussell, James) (Entered: 11/22/2016)	
8	11/22/2016	NOTICE of Attorney Appearance by Tiffany A Miller on behalf of Hitachi Maxell, Ltd. (Miller, Tiffany) (Entered: 11/22/2016)	
9	11/22/2016	NOTICE of Attorney Appearance by Kfir B Levy on behalf of Hitachi Maxell, Ltd. (Levy, Kfir) (Entered: 11/22/2016)	
10	12/01/2016	NOTICE of Attorney Appearance by Alan M Grimaldi on behalf of Hitachi Maxell, Ltd. (Grimaldi, Alan) (Entered: 12/01/2016)	
11	12/01/2016	NOTICE of Attorney Appearance by Baldine Brunel Paul on behalf of Hitachi Maxell, Ltd. (Paul, Baldine) (Entered: 12/01/2016)	
12	12/14/2016	ANSWER to 1 Complaint, , COUNTERCLAIM against Hitachi Maxell, Ltd. by ZTE USA Inc..(Upshaw, Everett) (Entered: 12/14/2016)	
13	12/14/2016	CORPORATE DISCLOSURE STATEMENT filed by ZTE USA Inc. identifying Corporate Parent ZTE Corporation for ZTE USA Inc.. (Upshaw, Everett) (Entered: 12/14/2016)	
	12/15/2016	In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice Regarding Consent to Proceed Before Magistrate Judge. (ch,) (Entered: 12/15/2016)	
14	12/15/2016	***FILED IN ERROR***NOTICE by Hitachi Maxell, Ltd. Summons (Culbertson, Geoffrey) Modified on 12/15/2016 (ch,). (Entered: 12/15/2016)	
15	12/15/2016	SUMMONS Issued as to ZTE Corporation. (ch,) (Entered: 12/15/2016)	
	12/15/2016	***FILED IN ERROR. SUMMONS ARE NOT FILED BY ATTORNEY Document # 14, Notice. PLEASE IGNORE.*** (ch,) (Entered: 12/15/2016)	
16	12/30/2016	NOTICE of Readiness for Scheduling Conference by Hitachi Maxell, Ltd. (Culbertson, Geoffrey) (Entered: 12/30/2016)	
17	01/04/2017	AMENDED ANSWER to 1 Complaint, , COUNTERCLAIM against Hitachi Maxell, Ltd. by ZTE USA Inc.. (Upshaw, Everett) (Entered: 01/04/2017)	
18	01/10/2017	SUMMONS REISSUED as to ZTE Corporation and given to plaintiff attorney. (sm,) (Entered: 01/10/2017)	

#	Date	Proceeding Text	Source
19	01/19/2017	Hitachi Maxell, Ltd.'s ANSWER to 17 Amended Answer to Complaint, Counterclaim by Hitachi Maxell, Ltd..(Culbertson, Geoffrey) (Entered: 01/19/2017)	
20	01/23/2017	ORDER Setting a Scheduling Conference, (Scheduling Conference set for 2/9/2017 10:30 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III.). Signed by Judge Robert W. Schroeder, III on 1/23/2017. (sm,) (Entered: 01/23/2017)	
21	01/26/2017	NOTICE of Attorney Appearance by Scott R Miller on behalf of ZTE USA Inc. (Miller, Scott) (Entered: 01/26/2017)	
22	01/27/2017	NOTICE of Attorney Appearance by Eric Hugh Findlay on behalf of ZTE USA Inc. (Findlay, Eric) (Entered: 01/27/2017)	
23	01/31/2017	Unopposed MOTION to Withdraw as Attorney and to Terminate ECF Notifications by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Upshaw, Everett) (Entered: 01/31/2017)	
24	02/02/2017	ORDER granting 23 Motion to Withdraw as Attorney. Attorney Everett McClyde Upshaw terminated. Signed by Judge Robert W. Schroeder, III on 2/1/2017. (sm,) (Entered: 02/02/2017)	
25	02/03/2017	NOTICE by ZTE USA Inc. OF ATTORNEY ATTENDING SCHEDULING CONFERENCE (Findlay, Eric) (Entered: 02/03/2017)	
26	02/03/2017	NOTICE by Hitachi Maxell, Ltd. Notice Identifying Attorneys That Will Attend Scheduling Conference for Hitachi Maxell, LTD. (Culbertson, Geoffrey) (Entered: 02/03/2017)	
27	02/06/2017	Submission of Proposed Agreed Discovery order by Hitachi Maxell, Ltd. . (Attachments: # 1 Text of Proposed Order)(Fussell, James) (Entered: 02/06/2017)	
28	02/06/2017	Submission of Proposed Agreed Protective order by Hitachi Maxell, Ltd. . (Attachments: # 1 Text of Proposed Order)(Fussell, James) (Entered: 02/06/2017)	
29	02/07/2017	Submission of Proposed Agreed Docket Control/Scheduling order by Hitachi Maxell, Ltd. . (Attachments: # 1 Text of Proposed Order)(Fussell, James) (Entered: 02/07/2017)	
	02/09/2017	Scheduling Conference held before Judge Robert W. Schroeder III on 2/9/2017. Attorneys in attendance were Tripp Fussell, Geoff Culbertson, Brian Craft and Eric Findlay. (bas) (Entered: 02/09/2017)	
30	02/21/2017	NOTICE of Designation of Mediator, Judge David Folsom (Ret.), filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 02/21/2017)	
31	02/22/2017	ORDER APPOINTING MEDIATOR AND SETTING MEDIATION DEADLINE, David Folsom added as Mediator, (Mediation Conference to be held on or before 6/16/2017.). Signed by Judge Robert W. Schroeder, III on 2/22/2017. (sm,) (Entered: 02/22/2017)	
32	03/01/2017	NOTICE of Attorney Appearance by Bryan Christopher Nese on behalf of Hitachi Maxell, Ltd. (Nese, Bryan) (Entered: 03/01/2017)	
33	03/06/2017	DISCOVERY ORDER FOR PATENT CASES. Signed by Judge Robert W. Schroeder, III on 3/6/2017. (sm,) (Entered: 03/06/2017)	
34	03/06/2017	PATENT PROTECTIVE ORDER. Signed by Judge Robert W. Schroeder, III on 3/6/2017. (sm,) (Entered: 03/06/2017)	
35	03/06/2017	DOCKET CONTROL/SCHEDULING ORDER: Pretrial Conference set for 6/5/2018 10:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III. Jury Selection set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III. Jury Trial set for 6/25/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III. Markman Hearing set for 9/6/2017 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert	

#	Date	Proceeding Text	Source
		W. Schroeder III. Dispositive Motionn Hearing set for 5/15/2018 09:00 AM in Ctrm 319 (Texarkana) before Judge Robert W. Schroeder III. Proposed Pretrial Order due by 5/22/2018.. Signed by Judge Robert W. Schroeder, III on 3/6/2017. (sm,) (Entered: 03/06/2017)	
36	04/04/2017	CONSOLIDATION ORDER that the above-styled cases are consolidated for pretrial issues only, with the exception of venue. The earliest filed civil action (5:16-cv-00178) shall serve as the lead case for the consolidated issues. The Clerk of the Court shall add the consolidated defendants to the lead case, as well as lead and local counsel only. All future pretrial filings, other than venue motions, shall be filed in the Lead case. Signed by Judge Robert W. Schroeder, III on 4/4/2017. (sm,) (Entered: 04/04/2017)	
	04/04/2017	***All future pretrial filings, other than venue motions, shall be filed Only in the lead case***. (sm,) (Entered: 04/04/2017)	
37	06/14/2017	***WITHDRAWN PER ORDER #46***Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order, # 2 Declaration of James Ray Wood, # 3 Declaration of Scott Miller, # 4 Exhibit 1 - Email from Hitachi)(Findlay, Eric) Modified on 7/24/2017 (sm,). (Entered: 06/14/2017)	
38	06/28/2017	SEALED RESPONSE to Motion re 37 Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS filed by Hitachi Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I)(Beaber, Jamie) (Entered: 06/28/2017)	
39	07/01/2017	Unopposed MOTION for Extension of Time to File Response/Reply as to 37 Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 07/01/2017)	
40	07/07/2017	Unopposed MOTION for Leave to File Excess Pages by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 07/07/2017)	
41	07/12/2017	ORDER granting 40 Motion for Leave to File Excess Pages in connect with Reply and Surreply. Signed by Judge Robert W. Schroeder, III on 7/12/2017. (sm,) (Entered: 07/12/2017)	
42	07/12/2017	ORDER granting 39 Motion for Extension of Time to File Response/Reply re 37 Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS Replies due by 7/12/2017.. Signed by Judge Robert W. Schroeder, III on 7/12/2017. (sm,) (Entered: 07/12/2017)	
43	07/12/2017	Unopposed MOTION for Extension of Time to File Response/Reply as to 37 Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 07/12/2017)	
44	07/14/2017	ORDER granting 43 Second Unopposed Motion for Extension of	

#	Date	Proceeding Text	Source
		Time to File. Signed by Judge Robert W. Schroeder, III on 7/14/2017. (slo,) (Entered: 07/14/2017)	
45	07/14/2017	Unopposed MOTION to Withdraw 37 Opposed MOTION to Dismiss FOR IMPROPER VENUE PURSUANT TO 28 U.S.C. §§ 1404 AND 1406, OR IN THE ALTERNATIVE, TO TRANSFER TO THE NORTHERN DISTRICT OF TEXAS by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 07/14/2017)	
46	07/24/2017	ORDER Granting 45 Motion to Withdraw 37 Motion to Dismiss; 37 Motion now Withdrawn/Terminated. Signed by Judge Robert W. Schroeder, III on 7/24/2017. (sm,) (Entered: 07/24/2017)	
47	10/26/2017	ORDER To Substitute Plaintiff Maxell, Ltd for Hitachi Maxell, Ltd. Signed by District Judge Robert W. Schroeder, III on 10/26/2017. (sm,) (Entered: 10/26/2017)	
48	03/19/2018	ORDER VACATING 36 Consolidation Order. The Clerk is directed to file the Claim Construction Order (Docket No. 175) in Case No. 5:16-cv-179. All other filings in Case No. 5:16-cv-178 relating to ZTE Corporation and/or ZTE USA Inc. are incorporated by reference into Case No. 5:16-cv-179.. Signed by District Judge Robert W. Schroeder, III on 3/19/2018. (sm,) (Entered: 03/19/2018)	
49	03/19/2018	CLAIM CONSTRUCTION MEMORANDUM AND ORDER (Order originally signed on 1/31/2018 but entered in this case today per Order #48). Signed by District Judge Robert W. Schroeder, III on 1/31/2018. (sm,) (Entered: 03/19/2018)	
50	03/19/2018	AMENDED DOCKET CONTROL ORDER: Pretrial Conference set for 6/7/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Jury Selection set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Jury Trial set for 6/18/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Dispositive Motionn Hearing set for 5/10/2018 09:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III. Motions in Limine due by 5/25/2018. Joint Pretrial Order due by 5/25/2018. Signed by District Judge Robert W. Schroeder, III on 3/19/2018. (slo,) (Entered: 03/19/2018)	
51	03/19/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE (USA), Inc.'s Sealed Motion to Exclude Portions of Expert Opinion Testimony (Docket Entry 207 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/19/2018)	
52	03/20/2018	RESPONSE to in Opposition to Maxell Ltd.'s First Daubert Motion to Exclude Mr. Scott Andrews' Untimely Opinions on Indefiniteness and Unreliable Opinions on Obviousness of U.S. Patent No. 6,748,317 (Docket Entry 200 in 5:16-cv-00178) filed by ZTE USA Inc.. (Attachments: # 1 Exhibit A)(Cunningham, Nicole) (Additional attachment(s) added on 3/21/2018: # 2 Text of Proposed Order) (slo,). (Entered: 03/20/2018)	
53	03/20/2018	RESPONSE to in Opposition to Maxell Ltd.'s Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and 8,736,729 (Docket Entry 201 in 5:16-cv-00178) filed by ZTE USA Inc.. (Cunningham, Nicole) (Additional attachment(s) added on 3/21/2018: # 1 Text of Proposed Order) (slo,). (Entered: 03/20/2018)	
54	03/20/2018	SEALED PATENT RESPONSE in Opposition to Maxell Ltd.'s SEALED Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193	

#	Date	Proceeding Text	Source
		(Docket Entry 202 in 5:16-cv-00178) filed by ZTE USA Inc. (Cunningham, Nicole) (Additional attachment(s) added on 3/21/2018: # 1 Text of Proposed Order) (slo,). (Entered: 03/20/2018)	
55	03/20/2018	SEALED PATENT RESPONSE in Opposition to Maxell Ltd.'s SEALED Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 (Docket Entry 203 in 5:16-cv-00178) filed by ZTE USA Inc. (Attachments: # 1 Declaration of Nicole S. Cunningham, # 2 Exhibit A) (Cunningham, Nicole) (Additional attachment(s) added on 3/21/2018: # 3 Text of Proposed Order) (slo,). (Entered: 03/20/2018)	
56	03/22/2018	REDACTION to 51 Response to Non-Motion, SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE (USA), Inc.'s Sealed Motion to Exclude Portions of Expert Opinion Testimony (Docket Entry 207 in 5:16-cv-00178) by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 03/22/2018)	
57	03/26/2018	RESPONSE to In Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. § 103 of Claims 1-7 of U.S. Patent No. 6,408,193 (Docket Entry 199 in 5:16-cv-00178) filed by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/26/2018)	
58	03/26/2018	SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178)filed by ZTE USA Inc.(Attachments: # 1 Declaration of Nicole S. Cunningham, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Text of Proposed Order)(Cunningham, Nicole) (Entered: 03/26/2018)	
59	03/26/2018	SEALED PATENT RESPONSE in Opposition to Maxell, Ltd.'s Motion for Summary Judgment of No Invalidity under 35 U.S.C. Section 103 of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 (Docket Entry 198 in 5:16-cv-00178) filed by ZTE USA Inc.(Attachments: # 1 Declaration of Tim Rawson, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Text of Proposed Order) (Cunningham, Nicole) (Entered: 03/26/2018)	
60	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. In Opposition to Defedant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement Under Doctrine of Equivalents (Docket Entry 205 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order, # 3 A Phinney Report, # 4 B Phinney Dep Transcript, # 5 C Caloyannides Report, # 6 D Caloyannides Dep Transcript, # 7 E Maher Report, # 8 F Madisetti Report)(Beaber, Jamie) Modified on 3/27/2018 (slo,). (Entered: 03/26/2018)	
61	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE (USA) Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,816,491 and 8,089,695 (Docket Entry 209 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order, # 3 Exhibit A Maher Report, # 4 Exhibit B Maher Dep Transcript)(Beaber, Jamie) Modified on 3/27/2018 to correct docket entry link. (slo,). (Entered: 03/26/2018)	
62	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to Defendant ZTE	

#	Date	Proceeding Text	Source
		USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S Patent No. 6,408,193 filed by Maxell, Ltd.. (Docket Entry 208 in 5:16-cv-00178) (Attachments: # 1 Declaration of Bryan Neese, # 2 Text of Proposed Order, # 3 Exhibit A Caloyannides Dep Transcript, # 4 Exhibit B Caloyannides Report)(Beaber, Jamie) (Entered: 03/26/2018)	
63	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317 (Docket Entry 206 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A Phinney Report, # 4 Exhibit B Wolfe Report, # 5 Exhibit C Phinney Validity Report, # 6 Exhibit D Caloyannides Dep Transcript, # 7 Exhibit E Caloyannides Infringement Report, # 8 Exhibit F Andrew Dep Transcript, # 9 Exhibit G Andrews Report, # 10 Exhibit H Braasch Dep Transcript)(Beaber, Jamie) (Entered: 03/26/2018)	
64	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion for Summary Judgment of Invalidity U.S. Patent No. 5,396,443 (Docket Entry 204 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A Phinney Report, # 4 Exhibit B Phinney Dep Transcript)(Beaber, Jamie) (Entered: 03/26/2018)	
65	03/26/2018	SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE USA Inc.'s Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794 (Docket Entry 196 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A Phinney Validity Report, # 4 Exhibit B Wolfe Invalidity Report, # 5 Exhibit C Wolfe Dep Transcript, # 6 Exhibit D Braasch Report)(Beaber, Jamie) (Entered: 03/26/2018)	
66	03/27/2018	NOTICE of Attorney Appearance by Howard Neil Wisnia on behalf of ZTE USA Inc. (Wisnia, Howard) (Entered: 03/27/2018)	
67	03/27/2018	SEALED MOTION for Leave to File Reply in Support of its Motion to Amend Invalidity Contentions by ZTE USA Inc.. (Attachments: # 1 Exhibit A, Declaration of S. O'Connell, # 2 Exhibit B, Text of Proposed Reply, # 3 Exhibit C, Declaration of S. O'Connell ISO Proposed Reply)(Cunningham, Nicole) (Additional attachment(s) added on 3/29/2018: # 4 Text of Proposed Order) (slo,). (Entered: 03/27/2018)	
68	03/27/2018	REPLY to 52 Response to Non-Motion, (Maxell Ltd.'s Reply in Support of First Daubert Motion to Exclude Mr. Scott Andrews' Untimely Opinions on Indefiniteness and Unreliable Opinions on Obviousness of U.S. Patent No. 6,748,317 (Docket Entry 200 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/27/2018)	
69	03/27/2018	SEALED PATENT REPLY by Maxell, Ltd. to 53 Response in Opposition to Maxell Ltd.'s Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and 8,736,729 (Docket Entry 201 in 5:16-cv-00178)filed by Maxell, Ltd. (Beaber, Jamie) (Entered: 03/27/2018)	
70	03/27/2018	REPLY to 54 Response to Non-Motion, Maxell Ltd.'s Reply in Support of it's Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent no. 6,408,193 (Docket Entry 202 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/27/2018)	
71	03/27/2018	SEALED PATENT REPLY by Maxell, Ltd. to 55 Response in Opposition to Maxell Ltd.'s Fourth Daubert Motion to Exclude	

#	Date	Proceeding Text	Source
		Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 (Docket Entry 203 in 5:16-cv-00178), filed by Maxell, Ltd.. (Attachments: # 1 Exhibit E)(Beaber, Jamie) (Entered: 03/27/2018)	
72	03/27/2018	SEALED PATENT REPLY by ZTE USA Inc. to 51 Response to Opposition to Sealed Motion to Exclude Portions of Expert Opinion Testimony (Docket Entry 207 in 5:16-cv-00178) filed by ZTE USA Inc.. (Cunningham, Nicole) Modified on 3/28/2018 (slo,). (Entered: 03/27/2018)	
73	03/28/2018	REDACTION to 60 SEALED PATENT RESPONSE by Maxell, Ltd In Opposition to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement Under Doctrine of Equivalents (Docket Entry 205 in 5:16-cv-0178) filed by Maxell, Ltd. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
74	03/28/2018	REDACTION to 61 SEALED PATENT RESPONSE by Maxell, Ltd.to ZTE (USA) Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,816,491 and 8,089,695 (Docket Entry 209 in 5:16-cv-0178) filed by Maxell Ltd. (Attachments: # 1 Declaration of Saqib J. Siddiqui, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
75	03/28/2018	REDACTION to 62 SEALED PATENT RESPONS by Maxell, Ltd. to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent No. 6,408,193 filed by Maxell, Ltd. (Docket Entry 208 in 5:16-cv-00178) (Attachments: # 1 Declaration of Bryan Nese, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
76	03/28/2018	REDACTION to 63 SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion for Summary Judgment of Non-Infringement of U.S Patent Nos. 5,396,443 and 6,748,317 (Docket Entry 206 in case 5:16-cv-0178) filed by Maxell, Ltd. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
77	03/28/2018	REDACTION to 64 SELAED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion for Summary Judgment of Invalidity U.S. Patent No. 5,396,443 (Docket Entry 204 in 5:16-cv-0178) filed by Maxell, Ltd. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
78	03/28/2018	REDACTION to 65 SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE USA Inc.'s Motion for Summary Judgment of Invalidity of U.S. Patent Nos 6,748,317 and 6,329,794 (Docket Entry 196 in 5:16-cv-0178) filed by Maxell, Ltd. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Text of Proposed Order, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D)(Beaber, Jamie) Modified on 3/28/2018 (slo,). (Entered: 03/28/2018)	
79	03/29/2018	REDACTION to 69 SEALED PATENT REPLY by Maxell, Ltd. to 53 Response in Opposition to Maxell Ltd's Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of US Patent Nos. 8,339,493 and 8,736,729 (Docket Entry 201 in 5:16-cv-178) filed by Maxell, Ltd. (Beaber, Jamie) Modified on 3/29/2018 (slo,). (Entered: 03/29/2018)	
80	03/29/2018	REDACTION to 71 SEALED PATENT REPLY by Maxell, Ltd. to	

#	Date	Proceeding Text	Source
		55 Response in Opposition to Maxell Ltd.'s Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 (Docket Entry 203 in 5:16-cv-178). (Attachments: # 1 Exhibit E)(Beaber, Jamie) Modified on 3/29/2018 (slo,). (Entered: 03/29/2018)	
81	03/30/2018	NOTICE of Attorney Appearance by Steven Arthur Moore on behalf of ZTE USA Inc. (Moore, Steven) (Entered: 03/30/2018)	
82	04/03/2018	SEALED PATENT REPLY to 64 SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion For Summary Judgment of Invalidity of U.S. Patent No. 5,396,443 (Docket Entry 204 in 5:16-cv-00178) filed by ZTE USA Inc. (Attachments: # 1 Declaration of Howard N. Wisnia, # 2 Exhibit A)(Cunningham, Nicole) Modified on 4/4/2018 (slo,). (Entered: 04/03/2018)	
83	04/03/2018	**FILED IN ERROR, PER ATTORNEY, PLEASE IGNORE. **SEALED PATENT REPLY by Maxell, Ltd. to 58 SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178)filed by ZTE USA Inc. filed by Maxell, Ltd.. (Beaber, Jamie) Modified on 4/4/2018 (slo,). (Entered: 04/03/2018)	
84	04/03/2018	SEALED PATENT REPLY by Maxell, Ltd. to 58 SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178)filed by ZTE USA Inc.(, filed by Maxell, Ltd.. (Attachments: # 1 Exhibit F, # 2 Exhibit G)(Beaber, Jamie) (Entered: 04/03/2018)	
85	04/03/2018	SEALED DECLARATION by Maxell, Ltd. to 84 SEALED PATENT REPLY by Maxell, Ltd. to 58 SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178)filed by ZTE USA Inc.(, filed by Maxell, Ltd.. filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/03/2018)	
86	04/03/2018	***FILED IN ERROR, PER ATTORNEY, PLEASE IGNORE***REPLY by ZTE USA Inc. to 65 SEALED RESPONSE by Maxell, Ltd to [ZTE (USA), Inc.'s Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794 (Docket Entry 196 in 5:16-cv-00178)] filed by ZTE USA Inc. (Cunningham, Nicole) Modified on 4/4/2018 (slo,). Modified on 4/4/2018 (sm,). (Entered: 04/03/2018)	
87	04/03/2018	SEALED PATENT REPLY by Maxell, Ltd. to 59 SEALED PATENT RESPONSE in Opposition to Maxell, Ltd.'s Motion for Summary Judgment of No Invalidity under 35 U.S.C. Section 103 of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 (Docket Entry 198 in 5:16-cv-00178) filed by ZTE USA Inc.(, filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/03/2018)	
88	04/03/2018	SEALED PATENT REPLY by ZTE USA Inc. to 60 SEALED PATENT RESPONSE in Opposition to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement Under Doctrine of Equivalents (Docket Entry 205 in 5:16-cv-00178)filed by ZTE USA, Inc. (Cunningham, Nicole) (Entered: 04/03/2018)	
89	04/03/2018	SEALED PATENT REPLY by ZTE USA Inc. to 62 SEALED PATENT RESPONSE in Opposition to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent	

#	Date	Proceeding Text	Source
		No. 6,408,193 (Docket Entry 208 in 5:16-cv-00178)filed by ZTE USA Inc. (Cunningham, Nicole) (Entered: 04/03/2018)	
90	04/03/2018	SEALED PATENT REPLY by ZTE USA Inc. to 63 SEALED PATENT RESPONSE in Opposition to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317 (Docket Entry 206 in 5:16-cv-00178) filed by ZTE USA Inc. (Cunningham, Nicole) (Entered: 04/03/2018)	
91	04/03/2018	SEALED PATENT REPLY by ZTE USA Inc. to 61 SEALED PATENT RESPONSE by Maxell Ltd. to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of US Patent Nos. 6,816,491 and 8,089,695 (Docket Entry 209 in 5:16-cv-00178) (Cunningham, Nicole) Modified on 4/4/2018 (slo,). (Entered: 04/03/2018)	
	04/04/2018	***FILED IN ERROR, PER ATTORNEY. Document # 83, Sealed Patent Reply. PLEASE IGNORE. Attorney has refiled. See Docket Entry 87 *** (slo,) (Entered: 04/04/2018)	
92	04/04/2018	SEALED PATENT SUR-REPLY by Maxell, Ltd. to 72 Reply in Support of Sealed Motion to Exclude Portions of Expert Opinion Testimony (Docket Entry 207 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit E)(Beaber, Jamie) (Entered: 04/04/2018)	
	04/04/2018	***FILED IN ERROR, PER ATTORNEY, ATTORNEY WILL REFILE. Document # 86, Reply. PLEASE IGNORE.*** (sm,) (Entered: 04/04/2018)	
93	04/04/2018	REPLY by ZTE USA Inc to 65 SEALED RESPONSE by Maxell, Ltd. to ZTE USA Inc's Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794 (Docket Entry 196 in 5:16-cv-00178)] (CORRECTED DKT. NO. 86) filed by ZTE USA Inc. (Cunningham, Nicole) Modified on 4/5/2018 (slo,). (Entered: 04/04/2018)	
94	04/05/2018	REDACTION to 84 SEALED PATENT REPLY by Maxell, Ltd. to 58 SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178) by Maxell, Ltd.. (Attachments: # 1 Exhibit F, # 2 Exhibit G)(Beaber, Jamie) Modified on 4/5/2018 (slo,). (Entered: 04/05/2018)	
95	04/05/2018	REDACTION to 85 SEALED DECLARATION by Maxell, Ltd. to 84 SEALED PATENT REPLY by Maxell, Ltd. to 58 SEALED PATENT RESPONSE in Opposition to Plaintiff Maxell, Ltd.'s Motion for Partial Summary Judgment of No Invalidity Under 35 U.S.C. Section 103 of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729 (Docket Entry 197 in 5:16-cv-00178) by Maxell, Ltd.. (Beaber, Jamie) Modified on 4/5/2018 (slo,). (Entered: 04/05/2018)	
96	04/05/2018	REDACTION to 87 SEALED PATENT REPLY by Maxell, Ltd. to 59 SEALED PATENT RESPONSE in Opposition to Maxell, Ltd.'s Motion for Summary Judgment of No Invalidity under 35 U.S.C. Section 103 of Claims 1-3 and 5-14 of U.S. Patent No. 6,329,794 (Docket Entry 198 in 5:16-cv-00178) by Maxell, Ltd.. (Beaber, Jamie) Modified on 4/5/2018 (slo,). (Entered: 04/05/2018)	
97	04/05/2018	NOTICE by ZTE USA Inc. re 67 SEALED MOTION for Leave to File Reply in Support of its Motion to Amend Invalidity Contentions Notice of Correction (O'Connell, Sara) (Entered: 04/05/2018)	
98	04/06/2018	REDACTION to 92 Sealed Patent Response to Non-Motion, by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit E)(Beaber, Jamie) (Entered: 04/06/2018)	

#	Date	Proceeding Text	Source
99	04/06/2018	SUR-REPLY to Reply to Response to Motion re 67 SEALED MOTION for Leave to File Reply in Support of its Motion to Amend Invalidity Contentions (Maxell's Consent to ZTE (USA), Inc.'s Motion for Leave to File Reply in Support of Motion to Amend Invalidity Contentions and Sur-Reply in Opposition to ZTE (USA), Inc.'s Motion to Amend (Docket Entry 194 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit F, # 3 Exhibit G)(Beaber, Jamie) (Entered: 04/06/2018)	
100	04/09/2018	ORDER granting 67 Sealed Motion for Leave to File Reply in Support of its Motion to Amend Invalidity Contentions by ZTE USA Inc. Signed by District Judge Robert W. Schroeder, III on 4/9/2018. (slo,) (Entered: 04/09/2018)	
101	04/11/2018	RESPONSE to 88 Sealed Patent Response to Non-Motion, (Maxell's Sur-Reply in Opposition to 88 SEALED PATENT REPLY by ZTE USA Inc. to 60 SEALED PATENT RESPONSE in Opposition to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement Under Doctrine of Equivalents (Docket Entry 205 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/11/2018)	
102	04/11/2018	RESPONSE to 93 Response to Non-Motion, (Maxell's Sur-Reply in Opposition to REPLY by ZTE USA Inc to 65 SEALED RESPONSE by Maxell, Ltd. to ZTE USA Inc's Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794 (Docket Entry 196 in 5:16-cv-00178)) filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/11/2018)	
103	04/11/2018	SEALED PATENT SUR-REPLY by Maxell, Ltd. to 89 SEALED PATENT REPLY by ZTE USA Inc. to 62 SEALED PATENT RESPONSE in Opposition to Defendant ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent No. 6,408,193 (Docket Entry 208 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/11/2018)	
104	04/11/2018	SEALED PATENT SUR-REPLY by Maxell, Ltd. to 82 SEALED PATENT REPLY to 64 SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion For Summary Judgment of Invalidity of U.S. Patent No. 5,396,443 (Docket Entry 204 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/11/2018)	
105	04/11/2018	SEALED PATENT SUR-REPLY by Maxell, Ltd. to 91 SEALED PATENT REPLY by ZTE USA Inc. to 61 SEALED PATENT RESPONSE by Maxell Ltd. to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of US Patent Nos. 6,816,491 and 8,089,695 (Docket Entry 209 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) (Entered: 04/11/2018)	
106	04/11/2018	SEALED PATENT SUR-REPLY by Maxell, Ltd. to 90 SEALED PATENT REPLY by ZTE USA Inc. to 63 SEALED PATENT RESPONSE in Opposition to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317 (Docket Entry 206 in 5:16-cv-00178) filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A of Lindinger Declaration)(Beaber, Jamie) (Entered: 04/11/2018)	
107	04/11/2018	***FILED IN ERROR, WRONG EVENT USED, PLEASE IGNORE.***NOTICE by ZTE USA Inc. re 69 Response to Non-Motion, ZTE'S SUR-REPLY RE MAXELL'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 8,339,493 AND 8,736,729 (Docket entry 197 in 5:16-cv-00178) (Cunningham, Nicole) Modified on 4/12/2018 (lfs,). (Entered: 04/11/2018)	
108	04/11/2018	***FILED IN ERROR, WRONG EVENT USED, PLEASE IGNORE***NOTICE by ZTE USA Inc. re 65 Response to Non-	

#	Date	Proceeding Text	Source
		Motion, ZTE'S SUR-REPLY RE MAXELL'S MOTION FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,329,794 (Docket entry 198 in 5:16-cv-00178) (Cunningham, Nicole) Modified on 4/12/2018 (lfs,). (Entered: 04/11/2018)	
	04/12/2018	***FILED IN ERROR, WRONG EVENT. Documents # 107 and 108, Notice. PLEASE IGNORE.*** (lfs,) (Entered: 04/12/2018)	
109	04/12/2018	RESPONSE to 69 Response to Non-Motion, ZTE's SUR-REPLY RE MAXELL, LTD.'S MOT FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 8,339,493 AND 8,736,729 (Docket Entry 197 in 5:16-cv-00178) filed by ZTE USA Inc.. (Cunningham, Nicole) (Entered: 04/12/2018)	
110	04/12/2018	RESPONSE to 65 Response to Non-Motion, ZTE'S SUR-REPLY RE MAXELL LTD.'S MOT FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY OF U.S. PATENT NO. 6,329,794 (Docket Entry 198 in 5:16-cv-00178) filed by ZTE USA Inc.. (Cunningham, Nicole) (Entered: 04/12/2018)	
111	04/13/2018	REDACTION to 103 SEALED PATENT SUR-REPLY by Maxell, Ltd.(Beaber, Jamie) Modified on 4/13/2018 (slo,). (Entered: 04/13/2018)	
112	04/13/2018	REDACTION to 104 SEALED PATENT SUR-REPLY by Maxell, Ltd. to 82 SEALED PATENT REPLY to 64 SEALED PATENT RESPONSE by Maxell, Ltd. to ZTE's Motion For Summary Judgment of Invalidity of U.S. Patent No. 5,396,443 (Docket Entry 204 in 5:16-cv-00178) filed by Maxell, Ltd.. (Beaber, Jamie) Modified on 4/13/2018 (slo,). (Entered: 04/13/2018)	
113	04/13/2018	REDACTION to 105 SEALED PATENT SUR-REPLY by Maxell, Ltd. to 91 SEALED PATENT REPLY by ZTE USA Inc. to 61 SEALED PATENT RESPONSE by Maxell Ltd. to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of US Patent Nos. 6,816,491 and 8,089,695 (Docket Entry 209 in 5:16-cv-00178) filed by Maxell, Ltd. (Beaber, Jamie) Modified on 4/13/2018 (slo,). (Entered: 04/13/2018)	
114	04/13/2018	REDACTION to 106 SEALED PATENT SUR-REPLY by Maxell, Ltd. to 90 SEALED PATENT REPLY by ZTE USA Inc. to 63 SEALED PATENT RESPONSE in Opposition to ZTE USA Inc.'s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317 (Docket Entry 206 in 5:16-cv-00178) filed by Maxell, Ltd.(Attachments: # 1 Declaration of Michael L. Lindinger, # 2 Exhibit A of Lindinger Declaration)(Beaber, Jamie) Modified on 4/13/2018 (slo,). (Entered: 04/13/2018)	
115	05/04/2018	STIPULATION MAXELL, LTD. AND ZTE USA INC.'S JOINT STIPULATION OF PARTIAL DISMISSAL by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/04/2018)	
116	05/05/2018	Joint MOTION to Seal Courtroom and Redact Transcript by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(O'Connell, Sara) (Entered: 05/05/2018)	
117	05/08/2018	NOTICE of Attorney Appearance by Roger Brian Craft on behalf of ZTE USA Inc. (Craft, Roger) (Entered: 05/08/2018)	
118	05/09/2018	ORDER granting 116 Motion to Seal Courtroom and Redact Relevant Transcript regarding 5/10/2018 hearing. Signed by District Judge Robert W. Schroeder, III on 5/9/2018. (slo,) (Entered: 05/09/2018)	
119	05/10/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Dispositive Motions Hearing held on 5/10/2018. (Court Reporter Jan Mason) (Attachments: # 1 Attorney Sign In	

#	Date	Proceeding Text	Source
		Sheet) (bas) (Entered: 05/10/2018)	
120	05/10/2018	ORDER GRANTING 115 Joint Stipulation of Partial Dismissal. Signed by District Judge Robert W. Schroeder, III on 05/10/18. (lfs,) (Entered: 05/10/2018)	
121	05/10/2018	Sealed Document. (Attachments: # 1 Exhibit A, # 2 Affidavit ISO Exhibit A, # 3 Exhibit B, # 4 Affidavit ISO Exhibit B)(O'Connell, Sara) (Entered: 05/10/2018)	
122	05/11/2018	NOTICE by Maxell, Ltd. Notice of Request for Daily Transcript and Real Time Reporting of Pre-Trial Conference and Trial Proceedings (Culbertson, Geoffrey) (Entered: 05/11/2018)	
123	05/16/2018	Unopposed MOTION to Withdraw as Attorney SCOTT R. MILLER by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Findlay, Eric) (Entered: 05/16/2018)	
124	05/16/2018	NOTICE by ZTE USA Inc. OF DESIGNATION OF LEAD COUNSEL - CALLIE A. BJURSTROM (Findlay, Eric) (Entered: 05/16/2018)	
125	05/16/2018	MOTION to Dismiss and in the Alternative, to Transfer Venue by ZTE USA Inc.. (Attachments: # 1 Exhibit A, In re ZTE Mandamus Order, # 2 Exhibit B, Declaration of J. Ray Wood, # 3 Exhibit C, Declaration of Matt Gates, # 4 Exhibit D, Declaration of Edward Rayeski, # 5 Text of Proposed Order)(Moore, Steven) (Entered: 05/16/2018)	
126	05/17/2018	NOTICE by Maxell, Ltd. Notice of Joint Proposed Juror Questionnaire (Attachments: # 1 Exhibit Proposed Juror Questionnaire)(Culbertson, Geoffrey) (Entered: 05/17/2018)	
127	05/17/2018	ORDER granting 123 Unopposed Motion to Withdraw as Attorney. Attorney Scott R Miller terminated. Signed by District Judge Robert W. Schroeder, III on 5/17/2018. (slo,) (Entered: 05/17/2018)	
128	05/18/2018	NOTICE by ZTE USA Inc. Pursuant to 35 USC 282 (O'Connell, Sara) (Entered: 05/18/2018)	
129	05/23/2018	Joint Stipulated MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) Modified on 5/23/2018 (slo,). (Entered: 05/23/2018)	
130	05/24/2018	Unopposed MOTION for Leave to File to File Notice of Transcript by ZTE USA Inc.. (Attachments: # 1 Exhibit A - ZTE, Inc.'s Notice of Request for Daily Transcript and Real Time Reporting of Pre-Trial Conference and Trial Proceedings, # 2 Affidavit Declaration of Nicole Cunningham in Support of ZTE (USA), Inc.'s Motion for Leave to File Notice of Transcript, # 3 Text of Proposed Order)(O'Connell, Sara) (Entered: 05/24/2018)	
131	05/24/2018	NOTICE of Request for Daily Transcript and Real Time Reporting of Pre-Trial Conference and Trial Proceedings by ZTE USA Inc. re 130 Unopposed MOTION for Leave to File to File Notice of Transcript yes (O'Connell, Sara) Modified on 5/24/2018 (slo,). (Entered: 05/24/2018)	
132	05/29/2018	ORDER (Pretrial Conference RESET for 6/6/2018 02:00 PM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.) Signed by District Judge Robert W. Schroeder, III on 5/29/2018. (slo,) Modified on 5/29/2018 (slo,). (Entered: 05/29/2018)	
133	05/29/2018	SEALED MOTION In Limine by ZTE USA Inc.. (Attachments: # 1 Affidavit of Sara J. O'Connell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(O'Connell, Sara) (Entered: 05/29/2018)	
134	05/29/2018	Sealed Pretrial Objections. (Beaber, Jamie) (Entered: 05/29/2018)	

#	Date	Proceeding Text	Source
135	05/29/2018	Opposed MOTION in Limine by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/29/2018)	
136	05/29/2018	Sealed Document (Pretrial Objections). (Attachments: # 1 Defendant ZTE (USA) Inc.'s Objections to Pretrial Disclosures, # 2 Defendant ZTE (USA) Inc.'s Objections to Maxell, Ltd.'s Rebuttal Exhibits Offered, # 3 Defendant ZTE (USA) Inc.'s Objections to Maxell, Ltd.'s Deposition Designations, # 4 Defendant ZTE (USA) Inc.'s Objections and Counter-Rebuttal Designations in Response to Maxell's Objections and Rebuttal Designations)(Cunningham, Nicole) Modified on 5/30/2018 (slo,). (Entered: 05/29/2018)	
137	05/31/2018	ORDER. (Pretrial Conference RESET for 6/6/2018 10:00 AM in Ctrm 319 (Texarkana) before District Judge Robert W. Schroeder III.) Signed by District Judge Robert W. Schroeder III on 5/31/2018. (slo,) (Entered: 05/31/2018)	
138	05/31/2018	RESPONSE in Opposition re 125 MOTION to Dismiss and in the Alternative, to Transfer Venue filed by Maxell, Ltd.. (Attachments: # 1 Declaration of James A. Fussell, III, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Text of Proposed Order)(Beaber, Jamie) (Entered: 05/31/2018)	
139	05/31/2018	ORDER. (The Clerk is directed to docket the following motions from Maxell, Ltd. v. Huawei Technologies Co. Ltd. et al , Case No. 5:16-cv-178 in Maxell, Ltd. v. ZTE Corporation et al, Case No. 5:16-cv-179: Docket Nos. 124, 184, 194 and 196-209.). Signed by District Judge Robert W. Schroeder, III on 5/31/2018. (slo,) (Entered: 06/01/2018)	
140	06/01/2018	SEALED MOTION FOR ALTERNATIVE SERVICE OF PROCESS by Maxell, Ltd. (Docket No. 124-Case No. 5:16-cv-178 and filed in this case per 139 Order. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
141	06/01/2018	MOTION to Strike Untimely Invalidity Positions Disclosed in the Opening Expert Reports of ZTE USA Inc. by Maxell, Ltd. (Docket No. 184-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Declaration of James A. Fussell III, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
142	06/01/2018	SEALED PATENT MOTION Memo of Points and Authorities in Support of Motion to Amend Invalidity Contentions by ZTE USA Inc. (Docket No. 194-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Exhibit A, # 2 Affidavit, # 3 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
143	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment of Invalidity of U.S. Patent Nos. 6,748,317 and 6,329,794 by ZTE USA Inc. (Docket No. 196-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit Matthew Stephens, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
144	06/01/2018	SEALED PATENT MOTION (Motion for Partial Summary Judgment of No Invalidity of Claims 5-6 of U.S. Patent No. 8,339,493 and Claims 1-2 of U.S. Patent No. 8,736,729) by Maxell, Ltd. (Docket No. 197-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E)(slo,) (Entered: 06/01/2018)	
145	06/01/2018	SEALED PATENT MOTION (Motion for Partial Summary Judgment of No Invalidity Claims 1-7 of U.S. Patent No. 6,408,193	

#	Date	Proceeding Text	Source
		by Maxell, Ltd. (Docket No. 199-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(slo,) (Entered: 06/01/2018)	
146	06/01/2018	SEALED PATENT MOTION (Motion for Partial Summary Judgment of No Invalidity Claims 1-3 and 5-14 of U.S Patent No. 6,329,794 by Maxell, Ltd. (Docket No. 198-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Clark Bakewell, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D, # 7 Exhibit E, # 8 Exhibit F, # 9 Exhibit G, # 10 Exhibit H)(slo,) (Entered: 06/01/2018)	
147	06/01/2018	MOTION First Daubert Motion to Exclude Mr. Scott Andrews' Untimely Opinions on Indefiniteness and Unreliable Opinions on Obviousness of U.S. Patent No. 6,748,317 by Maxell, Ltd. (Docket No. 200-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Michael Lindinger, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(slo,) (Entered: 06/01/2018)	
148	06/01/2018	MOTION Second Daubert Motion to Exclude Dr. Barmak Mansoorian's Conclusory Opinions on Obviousness of U.S. Patent Nos. 8,339,493 and 8,736,729 by Maxell, Ltd. (Docket No. 201-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Saqib Siddiqui, # 3 Exhibit A)(slo,) (Entered: 06/01/2018)	
149	06/01/2018	SEALED PATENT MOTION (Third Daubert Motion to Exclude Dr. Zhi Ding's Unreliable Opinions on Obviousness of U.S. Patent No. 6,408,193 by Maxell, Ltd. (Docket No. 202-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Bryan Nese, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C)(slo,) (Entered: 06/01/2018)	
150	06/01/2018	SEALED PATENT MOTION Fourth Daubert Motion to Exclude Portions of the Expert Report of Dr. Ketan Mayer-Patel Concerning U.S. Patent Nos. 6,816,491 and 8,098,695 by Maxell, Ltd. (Docket No. 203-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Tyler Earnest, # 3 Exhibit A, # 4 Exhibit B, # 5 Exhibit C, # 6 Exhibit D)(slo,) (Entered: 06/01/2018)	
151	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment of Invalidity of U.S. Patent No. 5,396,443) by ZTE USA Inc. (Docket No. 204-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit of Tim Rawson, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit R, # 6 Exhibit V, # 7 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
152	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment Re Non-Infringement Under Doctrine of Equivalents) by ZTE USA Inc. (Docket No. 205-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit of Christine Ko, # 2 Exhibit B, # 3 Exhibit F, # 4 Exhibit Q, # 5 Exhibit X, # 6 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
153	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 5,396,443 and 6,748,317) by ZTE USA Inc. (Docket No. 206-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit of Tim Rawson, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
154	06/01/2018	SEALED PATENT MOTION (Daubert Motion to Exclude Portions	

#	Date	Proceeding Text	Source
		of Expert Opinion Testimony) by ZTE USA Inc.(Docket No. 207-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit, # 9 Summons(es))(slo,) (Entered: 06/01/2018)	
155	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment of Non-Infringement U.S. Patent No. 6,408,193) by ZTE USA Inc. (Docket No. 208-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit of Nicole S. Cunningham, # 2 Exhibit F, # 3 Exhibit I, # 4 Exhibit L, # 5 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
156	06/01/2018	SEALED PATENT MOTION (Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,816,491 and 8,098,695) by ZTE USA Inc.(Docket No. 209-Case No. 5:16-cv-178 and filed in this case per 139 Order) (Attachments: # 1 Affidavit of Nicole Cunningham, # 2 Exhibit A, # 3 Exhibit Q, # 4 Exhibit U, # 5 Text of Proposed Order)(slo,) (Entered: 06/01/2018)	
157	06/01/2018	Emergency SEALED MOTION TO CONTINUE TRIAL DATE by ZTE USA Inc.. (Attachments: # 1 Exhibit A: Declaration of Matthew Gates with Exhibits, # 2 Exhibit B, # 3 Text of Proposed Order)(Cunningham, Nicole) (Entered: 06/01/2018)	
158	06/01/2018	Unopposed MOTION to Expedite Briefing on its Emergency Motion to Continue Trial Date by ZTE USA Inc.. (Attachments: # 1 Text of Proposed Order)(Cunningham, Nicole) (Entered: 06/01/2018)	
159	06/01/2018	SEALED RESPONSE to Motion re 133 SEALED MOTION In Limine filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/01/2018)	
160	06/01/2018	ORDER granting 158 Motion to Expedite Briefing. Plaintiff shall file a response to ZTEs Emergency Motion to Continue Trial Date no later than June 8, 2018. Signed by District Judge Robert W. Schroeder, III on 6/1/2018. (slo,) (Entered: 06/01/2018)	
161	06/01/2018	Proposed Pretrial Order Joint Final Pre-Trial Order by Maxell, Ltd.. (Attachments: # 1 Exhibit Maxell Witness List, # 2 Exhibit ZTE USA Witness List, # 3 Exhibit Maxell Depo Designation, # 4 Exhibit ZTE USA Depo Designation)(Culbertson, Geoffrey) (Entered: 06/01/2018)	
162	06/01/2018	SEALED ADDITIONAL ATTACHMENTS to Main Document: 161 Proposed Pretrial Order,. (Attachments: # 1 Exhibit Maxell Exhibit List, # 2 Exhibit ZTE USA Exhibit List)(Culbertson, Geoffrey) (Entered: 06/01/2018)	
163	06/01/2018	REDACTION to 133 SEALED MOTION In Limine by ZTE USA Inc.. (Attachments: # 1 Declaration of Sara J. O'Connell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Text of Proposed Order)(O'Connell, Sara) (Entered: 06/01/2018)	
164	06/01/2018	NOTICE by Maxell, Ltd. (JOINT NOTICE OF JURY SELECTION AND TRIAL TIME REQUESTED) (Beaber, Jamie) (Entered: 06/01/2018)	
165	06/01/2018	SEALED RESPONSE to Maxell's Motion in Limine 135 filed by ZTE USA Inc. (Attachments: # 1 Declaration of Sara J. O'Connell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H)(O'Connell, Sara) (Entered: 06/01/2018)	
166	06/01/2018	NOTICE by Maxell, Ltd. (JOINT NOTICE OF PARTIES PROPOSED VERDICT FORMS AND JURY INSTRUCTIONS)	

#	Date	Proceeding Text	Source
		(Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D)(Beaber, Jamie) (Entered: 06/01/2018)	
167	06/04/2018	NOTICE by Maxell, Ltd. Notice of Supplemental Authority (Attachments: # 1 Exhibit A)(Culbertson, Geoffrey) (Entered: 06/04/2018)	
168	06/05/2018	REDACTION to 159 Sealed Response to Motion, by Maxell, Ltd.. (Attachments: # 1 Declaration of Tiffany A. Miller, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/05/2018)	
169	06/05/2018	ORDER granting 130 Motion for Leave to File Notice of Request for Daily Transcript. Signed by District Judge Robert W. Schroeder, III on 6/5/2018. (sm,) (Entered: 06/05/2018)	
170	06/05/2018	AMENDED DOCKET CONTROL ORDER re 129 MOTION to Amend/Correct Docket Control Order as to Pretrial Filings Only filed by Maxell, Ltd. Signed by District Judge Robert W. Schroeder, III on 6/5/2018. (slo,) (Entered: 06/05/2018)	
171	06/05/2018	NOTICE by Maxell, Ltd. Plaintiff Maxell, Ltd.'s Request for Judicial Notice of the USPTO'S Decisions Denying Institution of Inter Partes Review of US Patent Nos. 6,748,317, 6,816,491, 8,736,729, 8,098,695, and 8,339,493 and Notice of Supplemental Authority (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E)(Culbertson, Geoffrey) (Entered: 06/05/2018)	
172	06/05/2018	REDACTION to 157 Emergency SEALED MOTION TO CONTINUE TRIAL DATE by ZTE USA Inc.. (Attachments: # 1 Exhibit, # 2 Exhibit, # 3 Text of Proposed Order)(O'Connell, Sara) (Entered: 06/05/2018)	
173	06/06/2018	MOTION Plaintiff Maxell, Ltd.'s Motion Requesting that the Court Take Judicial Notice of the USPTO'S Decisions Denying Institution of Inter Partes Review of U.S. Patent Nos. 6,748,317, 6,816,491, 8,736,729, 8,098,695, and 8,339,493 by Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 06/06/2018)	
174	06/06/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Final Pretrial Conference held on 6/6/2018. (Court Reporter Shea Sloan) (Attachments: # 1 Attorney Sign In Sheet) (bas) (Entered: 06/06/2018)	
175	06/06/2018	ORDER ON TRIAL PROCEDURES. Signed by District Judge Robert W. Schroeder, III on 6/6/2018. (slo,) (Entered: 06/06/2018)	
176	06/06/2018	ORDER on 133 Defendant's Sealed Motion in Limine; and 135 Plaintiff's Motion in Limine. Signed by District Judge Robert W. Schroeder, III on 6/6/2018. (slo,) (Entered: 06/06/2018)	
177	06/07/2018	SEALED SUPPLEMENTAL BRIEF re 133 SEALED MOTIONS in Limine 4 and 10 filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C)(Beaber, Jamie) (Entered: 06/07/2018)	
178	06/07/2018	REDACTION to 177 Sealed Response to Motion (Public Version of Maxell's Supplemental Brief Regarding ZTE Motions in Limine 4 and 10) by Maxell, Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C)(Beaber, Jamie) (Entered: 06/07/2018)	
179	06/08/2018	SEALED RESPONSE by ZTE USA Inc. to 177 Sealed Response to Motion filed by ZTE USA Inc.. (Bjurstrom, Callie) (Entered: 06/08/2018)	
180	06/08/2018	Sealed Transcript. (jm,) (Entered: 06/08/2018)	
181	06/08/2018	SEALED ORDER denying 143 Sealed Patent Motion; denying 144	

#	Date	Proceeding Text	Source
		Sealed Patent Motion; denying as moot 145 Sealed Patent Motion; granting in part and denying in part 146 Sealed Patent Motion; granting in part and denying in part 147 Motion ; denying 148 Motion; denying 149 Sealed Patent Motion; denying 150 Sealed Patent Motion; denying as moot 151 Sealed Patent Motion; granting in part and denying in part 152 Sealed Patent Motion; denying as moot with respect to '443 patent and denying with respect to '317 patent 153 Sealed Patent Motion; denying 154 Sealed Patent Motion; denying 155 Sealed Patent Motion; granting in part and denying in part 156 Sealed Patent Motion. Signed by District Judge Robert W. Schroeder, III on 6/8/2018. (slo,) (Unsealed per Order 284 .) Modified on 7/31/2018 (slo,). (Entered: 06/08/2018)	
182	06/08/2018	REDACTION to 165 Sealed Response to Motion, Opposition to Plaintiff's Motions In Limine by ZTE USA Inc.. (Attachments: # 1 Affidavit Declaration of Sara J. O'Connell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H)(O'Connell, Sara) (Entered: 06/08/2018)	
183	06/08/2018	RESPONSE in Opposition re 157 Emergency SEALED MOTION TO CONTINUE TRIAL DATE filed by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/08/2018)	
184	06/08/2018	SEALED REPLY by ZTE (USA) Inc. to Response to Motion re 125 MOTION to Dismiss and in the Alternative, to Transfer Venue filed by ZTE USA Inc.. (Attachments: # 1 Exhibit A to ZTE (USA) Inc.'s Reply in Support of Its Renewed Motion to Dismiss, and in the Alternatove, to Transfer Venue)(Moore, Steven) (Entered: 06/08/2018)	
185	06/11/2018	SEALED ORDER denying 141 Motion to Strike ; denying 142 Sealed Patent Motion. Signed by District Judge Robert W. Schroeder, III on 6/11/2018. (slo,) (Unsealed per Order 284 .) Modified on 7/31/2018 (slo,) (Entered: 06/11/2018)	
186	06/12/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Pretrial Conference Proceedings held on 6/6/2018 before Judge Robert W. Schroeder III. Court Reporter: Shea Sloan, shea_sloan@txed.uscourts.gov. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/3/2018. Release of Transcript Restriction set for 9/10/2018. (sms,) (Entered: 06/12/2018)	
	06/12/2018	ORAL ORDER denying 157 Sealed Motion to Continue Trial Date for the reasons provided in the telephonic hearing held on 6/12/18. Entered by District Judge Robert W. Schroeder III on 6/12/18. (SMC) (Entered: 06/12/2018)	
187	06/12/2018	Minute Entry for telephonic proceedings held before District Judge Robert W. Schroeder III: Motion Hearing held on 6/12/2018 re 157 Emergency SEALED MOTION TO CONTINUE TRIAL DATE filed by ZTE USA Inc., Status Conference held on 6/12/2018. (Court Reporter Shea Sloan) (SMC) (Entered: 06/12/2018)	
188	06/13/2018	SUR-REPLY to Reply to Response to Motion re 125 MOTION to Dismiss and in the Alternative, to Transfer Venue filed by Maxell,	

#	Date	Proceeding Text	Source
		Ltd.. (Beaber, Jamie) (Entered: 06/13/2018)	
189	06/14/2018	MOTION Requesting that the Court Take Judicial Notice of the USPTO's Decision Denying Institution of Inter Partes Review of U.S. Patent No. 6,408,193 by Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Beaber, Jamie) (Entered: 06/14/2018)	
190	06/14/2018	Proposed Pretrial Order Amended Joint Final Pre-Trial Order by Maxell, Ltd.. (Beaber, Jamie) (Entered: 06/14/2018)	
191	06/15/2018	Proposed Jury Instructions by Maxell, Ltd.. (Attachments: # 1 Exhibit A - Maxell Proposed Jury Instructions, # 2 Exhibit B - Redline ZTE Proposed Jury Instructions)(Culbertson, Geoffrey) (Entered: 06/15/2018)	
192	06/15/2018	Proposed Jury Instructions by ZTE USA Inc.. (Attachments: # 1 Jury Instructions)(O'Connell, Sara) (Entered: 06/15/2018)	
193	06/15/2018	SEALED ORDER granting 140 Motion for Alternative Service and further ordering that Plaintiffs claims against Defendant ZTE Corp. are hereby SEVERED from the above-captioned case into a new cause of action. The filing fee for the severed cause of action against ZTE Corporation is waived. Signed by District Judge Robert W. Schroeder, III on 6/15/2018. (slo,) (Unsealed per Order 284 .) Modified on 7/31/2018 (slo,). (Entered: 06/15/2018)	
	06/15/2018	***FILED IN ERROR PER ATTORNEY Document # 195,. PLEASE IGNORE.*** (klc,) (Entered: 06/15/2018)	
196	06/15/2018	Sealed Document Defendant's Amended Trial Exhibit List. (Cunningham, Nicole) (Entered: 06/15/2018)	
197	06/18/2018	Sealed Response to Plaintiff's Objections to Demonstrative Exhibits by ZTE(USA), Inc. (O'Connell, Sara) (Entered: 06/18/2018)	
198	06/18/2018	FINAL PRETRIAL ORDER. Signed by District Judge Robert W. Schroeder, III on 06/18/18. (mll,) (Entered: 06/18/2018)	
199	06/18/2018	SEALED ORDER carrying in part and denying in part 133 Motion in Limine. Signed by District Judge Robert W. Schroeder, III on 06/18/18. (mll,) (Unsealed per Order 284 .) Modified on 7/31/2018 (slo,). (Entered: 06/18/2018)	
200	06/18/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Jury selection and first day of jury trial held on 6/18/2018. (Court Reporter Chris Bickham) (Attachments: # 1 Attorney Sign In Sheet) (bas) (Entered: 06/18/2018)	
201	06/18/2018	Sealed Document. (Notice of Objections) (Attachments: # 1 Exhibit A, # 2 Exhibit B)(O'Connell, Sara) Modified on 6/19/2018 (slo,). (Entered: 06/18/2018)	
202	06/19/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Second day of jury trial held on 6/19/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/19/2018)	
203	06/19/2018	Sealed Document. Plaintiff Maxell, Ltd.'s Notice of Violations of Protective Order, Trial Procedures, and Motion in Limine. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D)(Beaber, Jamie) (Entered: 06/19/2018)	
204	06/20/2018	SEALED RESPONSE by ZTE USA Inc. to 203 Sealed Document filed by ZTE USA Inc.. (Attachments: # 1 Affidavit DECLARATION OF NICOLE S. CUNNINGHAM IN SUPPORT OF DEFENDANT ZTE (USA), INC.S RESPONSE TO PLAINTIFF MAXELL, LTD.S NOTICE OF VIOLATIONS OF PROTECTIVE ORDER TRIAL PROCEDURES, AND MOTION IN LIMINE)(Bjurstrom, Callie) (Entered: 06/20/2018)	
205	06/20/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Third day of jury trial held on 6/20/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/20/2018)	

#	Date	Proceeding Text	Source
	06/21/2018	ORAL ORDER denying 125 Motion to Dismiss or Transfer for the reasons provided during the in chambers conference held on 6/18/18. Signed by District Judge Robert W. Schroeder III on 6/18/18. (SMC) (Entered: 06/21/2018)	
206	06/21/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Fourth day of jury trial held on 6/21/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/21/2018)	
207	06/21/2018	Sealed Document. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C)(O'Connell, Sara) (Entered: 06/21/2018)	
208	06/22/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Fifth day of jury trial held on 6/22/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/22/2018)	
209	06/22/2018	Proposed Pretrial Order Second Amended Joint Final Pre-Trial Order by Maxell, Ltd.. (Culbertson, Geoffrey) (Entered: 06/22/2018)	
210	06/24/2018	Sealed Document. Plaintiff Maxell Ltd.'s Statement Regarding Treatment of Jury Consultants Under the Protective Order (Attachments: # 1 Exhibit A - Patent Protective Order)(Culbertson, Geoffrey) (Entered: 06/24/2018)	
211	06/24/2018	SEALED RESPONSE by ZTE USA Inc. to 210 Maxell, Ltd.'s Statement Regarding Treatment of Jury Consultants Under the Protective Order filed by ZTE USA Inc.. (Attachments: # 1 Declaration of Howard N. Wisnia)(Wisnia, Howard) (Entered: 06/24/2018)	
212	06/25/2018	Sealed Document. ZTE (USA), Inc.'s Objections to Madisetti Slide 168 and Tian Dao Testimony (Attachments: # 1 Exhibit A, # 2 Exhibit B) (O'Connell, Sara) (Entered: 06/25/2018)	
213	06/25/2018	SEALED RESPONSE by ZTE (USA) Inc. to Maxell, Ltd.'s Objections to Deposition Testimony of Inventors filed by ZTE (USA) Inc. (Bjurstrom, Callie) (Entered: 06/25/2018)	
214	06/25/2018	Sealed Document. (Notice of Objections to Proposed Trial Evidence) (Attachments: # 1 Exhibit A, # 2 Exhibit B)(O'Connell, Sara) Modified on 6/25/2018 (slo,). (Entered: 06/25/2018)	
215	06/25/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Sixth day of jury trial held on 6/25/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/25/2018)	
216	06/26/2018	SEALED RESPONSE by ZTE USA Inc. to Maxell's Objections to Testimony Designated by ZTE filed by ZTE USA Inc. (Stephens, Matthew) (Entered: 06/26/2018)	
217	06/26/2018	REDACTION to 210 Sealed Document by Maxell, Ltd.. (Attachments: # 1 Exhibit A - Patent Protective Order)(Beaber, Jamie) (Entered: 06/26/2018)	
218	06/26/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Seventh day of jury trial held on 6/26/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/26/2018)	
219	06/27/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Eighth day of jury trial held on 6/27/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/27/2018)	
220	06/28/2018	SEALED RESPONSE by ZTE USA Inc. to Maxell, Ltd.'s Notice of Objections to Proposed Trial Evidence/Demonstratives filed by ZTE USA Inc. (Attachments: # 1 Exhibit A, # 2 Exhibit B) (Stephens, Matthew) (Entered: 06/28/2018)	
221	06/28/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Ninth day of jury trial held on 6/28/2018. (Court Reporter Chris Bickham) (bas) (Entered: 06/28/2018)	
222	06/29/2018	Minute Entry for proceedings held before District Judge Robert W. Schroeder III: Tenth and final day of jury trial completed on 6/29/2018. (Court Reporter Chris Bickham) (bas) (Entered:	

#	Date	Proceeding Text	Source
		06/29/2018)	
223	06/29/2018	Final Jury Instructions. (bas) (Entered: 06/29/2018)	
224	06/29/2018	Plaintiff's Final Exhibit List. (bas) (Entered: 06/29/2018)	
225	06/29/2018	Defendant's Final Exhibit List. (bas) (Entered: 06/29/2018)	
226	06/29/2018	SEALED Jury Notes. (bas) (Entered: 06/29/2018)	
227	06/29/2018	SEALED Verdict Form. (bas) (Entered: 06/29/2018)	
228	06/29/2018	Verdict Form (foreperson's name redacted.) (bas) (Entered: 06/29/2018)	
229	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of In-chambers Pretrial and Voir Dire Proceedings - Morning Session held on 6/18/2018 before Judge Robert W. Schroeder. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
230	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Voir Dire Proceedings (cont.) - Afternoon Session held on 6/18/2018 before Judge Robert W. Schroeder. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
232	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/19/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
235	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/21/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file	

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236	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/21/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
237	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/22/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
238	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/22/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
239	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/25/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file	

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240	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/25/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
241	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/26/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
242	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/26/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
243	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/27/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file	

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		with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
244	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/27/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
245	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/28/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
246	07/02/2018	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/28/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Motion to Redact due 7/23/2018. Release of Transcript Restriction set for 10/1/2018. (sms,) (Entered: 07/02/2018)	
249	07/02/2018	Sealed Portion No. 1 - 6/19/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
250	07/02/2018	Sealed Portions Nos. 2 through 4 - 6/19/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
251	07/02/2018	Sealed Portion No. 5 - 6/20/2018 Morning Session. (sms,)	

#	Date	Proceeding Text	Source
		(Entered: 07/02/2018)	
252	07/02/2018	Sealed Portions Nos. 6 through 8 - 6/20/2018 Afternoon Session.(sms,) (Entered: 07/02/2018)	
253	07/02/2018	Sealed Portion No. 9 - 6/21/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
254	07/02/2018	Sealed Portions Nos. 10 and 11 - 6/21/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
255	07/02/2018	Sealed Portions Nos. 12 and 13 - 6/22/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
256	07/02/2018	Sealed Portions Nos. 14 and 15 - 6/22/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
257	07/02/2018	Sealed Portions Nos. 16 and 17 - 6/25/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
258	07/02/2018	Sealed Portions Nos. 18 and 19 - 6/25/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
259	07/02/2018	Sealed Portion No. 20 - 6/26/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
260	07/02/2018	Sealed Portions Nos. 21 and 22 - 6/26/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
261	07/02/2018	Sealed Portions Nos. 23 and 24 - 6/27/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
262	07/02/2018	Sealed Portions Nos. 25 and 26 - 6/27/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
263	07/02/2018	Sealed Portion No. 27 - 6/28/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
264	07/02/2018	Sealed Portions Nos. 28 and 29 - 6/28/2018 Afternoon Session. (sms,) (Entered: 07/02/2018)	
265	07/02/2018	Sealed Portion No. 30 - 6/29/2018 Morning Session. (sms,) (Entered: 07/02/2018)	
266	07/05/2018	Joint MOTION to Seal Trial Exhibits by Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/05/2018)	
267	07/09/2018	ORDER granting 266 Motion to Seal Trial Exhibits. Signed by District Judge Robert W. Schroeder, III on 7/9/2018. (sm,) (Entered: 07/09/2018)	
268	07/10/2018	NOTICE of Intent to Request Redaction by Jamie B Beaber re 234 Transcript,,, 231 Transcript,,, 233 Transcript,,, 248 Transcript,,,. (Beaber, Jamie) (Entered: 07/10/2018)	
269	07/11/2018	NOTICE by ZTE USA Inc. of Intent to Request Redaction or Sealing of Transcripts of the Record of Trial (Cunningham, Nicole) (Entered: 07/11/2018)	
270	07/12/2018	NOTICE of Attorney Appearance by Lionel Marks Lavenue on behalf of ZTE USA Inc. (Lavenue, Lionel) (Entered: 07/12/2018)	
271	07/13/2018	NOTICE of Attorney Appearance - Pro Hac Vice by Andrew J. Pincus on behalf of Maxell, Ltd.. Filing fee $ 100, receipt number 0540-6854037. (Pincus, Andrew) (Entered: 07/13/2018)	
272	07/13/2018	NOTICE of Attorney Appearance - Pro Hac Vice by Paul Hughes on behalf of Maxell, Ltd.. Filing fee $ 100, receipt number 0540-6854064. (Hughes, Paul) (Entered: 07/13/2018)	
273	07/13/2018	NOTICE of Attorney Appearance - Pro Hac Vice by Jonathan Weinberg on behalf of Maxell, Ltd.. Filing fee $ 100, receipt number 0540-6854079. (Weinberg, Jonathan) (Entered: 07/13/2018)	
274	07/13/2018	DEFICIENT DOCUMENT. ATTORNEY MUST REFILE. Unopposed MOTION for Extension of Time to File Answer re 1 Complaint, by ZTE Corporation. (Attachments: # 1 Text of Proposed Order)(Cunningham, Nicole) Modified on 7/17/2018	

#	Date	Proceeding Text	Source
		(slo,). (Entered: 07/13/2018)	
275	07/16/2018	ORDER. (The Court plans to file unsealed versions of Orders (Dkt. 181, 185, 193 and 199) no later than 8/1/2018. The parties may file a joint sealed motion to redact limited portions of each Order no later than 7/27/2018.) Signed by District Judge Robert W. Schroeder, III on 7/16/2018. (slo,) (Entered: 07/16/2018)	
	07/17/2018	NOTICE of Deficiency regarding Document 274. The submitted document was filed in wrong case. Attorney to refile in correct case. Correction should be made by One Business Day. (slo,) (Entered: 07/17/2018)	
276	07/23/2018	Unopposed SEALED MOTION for Additional Redactions or Sealing by Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/23/2018)	
277	07/23/2018	Unopposed SEALED MOTION for Redaction of Trial Transcripts by ZTE USA Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Cunningham, Nicole) (Entered: 07/23/2018)	
278	07/24/2018	REDACTION to 276 Unopposed SEALED MOTION for Additional Redactions or Sealing by Maxell, Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/24/2018)	
279	07/24/2018	REDACTION to 277 Unopposed SEALED MOTION for Redaction of Trial Transcripts by ZTE Corporation, ZTE USA Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Text of Proposed Order)(Cunningham, Nicole) (Entered: 07/24/2018)	
280	07/25/2018	Joint MOTION for Entry of Post-Trial Briefing Schedule by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Beaber, Jamie) (Entered: 07/25/2018)	
281	07/30/2018	ORDER granting 276 Sealed Motion for Additional Redactions or Sealing. Signed by District Judge Robert W. Schroeder, III on 7/30/2018. (slo,) (Entered: 07/30/2018)	
283	07/30/2018	ORDER Setting Post-Trial Briefing Schedule re 280 Joint MOTION for Entry of Post-Trial Briefing Schedule filed by Maxell, Ltd. Signed by District Judge Robert W. Schroeder, III on 7/30/2018. (slo,) (Entered: 07/30/2018)	
284	07/31/2018	ORDER. The Clerk is directed to unseal Docket Nos. 181 , 185 , 193 and 199 . Signed by District Judge Robert W. Schroeder, III on 7/31/2018. (slo,) (Entered: 07/31/2018)	
285	08/03/2018	SEALED PATENT MOTION Post-Trial Motions and Renewed Motion for Judgment as a Matter of Law by Maxell, Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Declaration of Saqib J. Siddiqui, # 3 Declaration of Clark Bakewell, # 4 Exhibit 1, # 5 Exhibit 2, # 6 Exhibit 3, # 7 Exhibit 4, # 8 Exhibit 5, # 9 Exhibit 6, # 10 Exhibit 7, # 11 Exhibit 8, # 12 Exhibit 9, # 13 Exhibit 10, # 14 Exhibit 11, # 15 Exhibit 12, # 16 Exhibit 13, # 17 Exhibit 14, # 18 Exhibit 15, # 19 Exhibit 16, # 20 Exhibit 17, # 21 Exhibit 18, # 22 Exhibit 19, # 23 Exhibit 20, # 24 Exhibit 21, # 25 Exhibit 22, # 26 Exhibit 23, # 27 Exhibit 24, # 28 Exhibit 25, # 29 Exhibit 26, # 30 Exhibit 27, # 31 Exhibit 28, # 32 Exhibit 29, # 33 Exhibit 30, # 34 Exhibit 31, # 35 Exhibit 32, # 36 Exhibit 33, # 37 Exhibit 34, # 38 Exhibit 35, # 39 Exhibit 36, # 40 Exhibit 37, # 41 Exhibit 38, # 42 Exhibit 39, # 43 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/03/2018)	
286	08/03/2018	SEALED PATENT MOTION Pursuant to Rules 50 and 59 by ZTE USA Inc.. (Attachments: # 1 Affidavit, # 2 Exhibit, # 3 Exhibit, # 4 Exhibit, # 5 Exhibit, # 6 Exhibit, # 7 Exhibit, # 8 Exhibit, # 9 Exhibit, # 10 Exhibit, # 11 Exhibit, # 12 Exhibit, # 13 Exhibit, # 14 Exhibit, # 15 Exhibit, # 16 Exhibit, # 17 Exhibit, # 18 Text of Proposed	

#	Date	Proceeding Text	Source
		Order)(O'Connell, Sara) (Entered: 08/03/2018)	
287	08/07/2018	REDACTION to 285 SEALED PATENT MOTION Post-Trial Motions and Renewed Motion for Judgment as a Matter of Law by Maxell, Ltd.. (Attachments: # 1 Declaration of Kfir B. Levy, # 2 Declaration of Saqib J. Siddiqui, # 3 Declaration of Clark Bakewell, # 4 Exhibit 1, # 5 Exhibit 2, # 6 Exhibit 3, # 7 Exhibit 4, # 8 Exhibit 5, # 9 Exhibit 6, # 10 Exhibit 7, # 11 Exhibit 8, # 12 Exhibit 9, # 13 Exhibit 10, # 14 Exhibit 11, # 15 Exhibit 12, # 16 Exhibit 13, # 17 Exhibit 14, # 18 Exhibit 15, # 19 Exhibit 16, # 20 Exhibit 17, # 21 Exhibit 18, # 22 Exhibit 19, # 23 Exhibit 20, # 24 Exhibit 21, # 25 Exhibit 22, # 26 Exhibit 23, # 27 Exhibit 24, # 28 Exhibit 25, # 29 Exhibit 26, # 30 Exhibit 27, # 31 Exhibit 28, # 32 Exhibit 29, # 33 Exhibit 30, # 34 Exhibit 31, # 35 Exhibit 32, # 36 Exhibit 33, # 37 Exhibit 34, # 38 Exhibit 35, # 39 Exhibit 36, # 40 Exhibit 37, # 41 Exhibit 38, # 42 Exhibit 39, # 43 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/07/2018)	
288	08/07/2018	REDACTION to 286 SEALED PATENT MOTION Pursuant to Rules 50 and 59 by ZTE USA Inc.. (O'Connell, Sara) (Entered: 08/08/2018)	
289	08/24/2018	SEALED RESPONSE to Motion re 285 SEALED PATENT MOTION Post-Trial Motions and Renewed Motion for Judgment as a Matter of Law filed by ZTE USA Inc.. (Attachments: # 1 Affidavit, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Exhibit R, # 20 Exhibit S)(O'Connell, Sara) (Additional attachment(s) added on 8/28/2018: # 21 Text of Proposed Order) (slo,). (Entered: 08/24/2018)	
290	08/24/2018	SEALED PATENT RESPONSE to SEALED PATENT MOTION re 286 SEALED PATENT MOTION Pursuant to Rules 50 and 59 filed by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Exhibit 20, # 22 Exhibit 21, # 23 Exhibit 22, # 24 Exhibit 23, # 25 Exhibit 24, # 26 Exhibit 25, # 27 Exhibit 26, # 28 Exhibit 27, # 29 Exhibit 28, # 30 Exhibit 29, # 31 Exhibit 30, # 32 Exhibit 31, # 33 Exhibit 32, # 34 Exhibit 33, # 35 Exhibit 34, # 36 Exhibit 35, # 37 Exhibit 36, # 38 Exhibit 37, # 39 Exhibit 38, # 40 Exhibit 39, # 41 Exhibit 40, # 42 Exhibit 41, # 43 Exhibit 42, # 44 Exhibit 43, # 45 Exhibit 44, # 46 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/24/2018)	
291	08/28/2018	REDACTION to 289 Sealed Response to Motion,, Post-Trial Motions and Renewed Motion for Judgment as a Matter of Law by ZTE USA Inc.. (Attachments: # 1 Affidavit, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J, # 12 Exhibit K, # 13 Exhibit L, # 14 Exhibit M, # 15 Exhibit N, # 16 Exhibit O, # 17 Exhibit P, # 18 Exhibit Q, # 19 Exhibit R, # 20 Exhibit S, # 21 Text of Proposed Order)(O'Connell, Sara) (Entered: 08/28/2018)	
292	08/28/2018	REDACTION to 290 Sealed Patent Response to Sealed Patent Motion,,,, by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Exhibit 20, # 22 Exhibit	

#	Date	Proceeding Text	Source
		21, # 23 Exhibit 22, # 24 Exhibit 23, # 25 Exhibit 24, # 26 Exhibit 25, # 27 Exhibit 26, # 28 Exhibit 27, # 29 Exhibit 28, # 30 Exhibit 29, # 31 Exhibit 30, # 32 Exhibit 31, # 33 Exhibit 32, # 34 Exhibit 33, # 35 Exhibit 34, # 36 Exhibit 35, # 37 Exhibit 36, # 38 Exhibit 37, # 39 Exhibit 38, # 40 Exhibit 39, # 41 Exhibit 40, # 42 Exhibit 41, # 43 Exhibit 42, # 44 Exhibit 43, # 45 Exhibit 44, # 46 Text of Proposed Order)(Beaber, Jamie) (Entered: 08/28/2018)	
293	08/28/2018	REDACTION TO DOCKET 231 - NOTICE OF FILING OF REDACTED OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/19/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.(sms,) (Entered: 08/28/2018)	
294	08/28/2018	REDACTION TO DOCKET 233 - NOTICE OF FILING OF REDACTED OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/20/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. (sms,) (Entered: 08/28/2018)	
295	08/28/2018	REDACTION TO DOCKET 234 - NOTICE OF FILING OF REDACTED OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/20/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. (sms,) (Entered: 08/28/2018)	
296	08/28/2018	REDACTION TO DOCKET 247 - NOTICE OF FILING OF REDACTED OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Morning Session held on 6/29/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.(sms,) (Entered: 08/28/2018)	
297	08/28/2018	REDACTION TO DOCKET 248 - NOTICE OF FILING OF REDACTED OFFICIAL TRANSCRIPT of Jury Trial Proceedings - Afternoon Session held on 6/29/2018 before Judge Robert W. Schroeder III. Court Reporter: Chris Bickham, chris_bickham@txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. (sms,) (Entered: 08/28/2018)	
298	09/07/2018	SEALED PATENT REPLY to Response to PATENT Motion re 286 SEALED PATENT MOTION Pursuant to Rules 50 and 59 filed by ZTE USA Inc.. (Attachments: #(1) Affidavit Sara J. O'Connell, #(2) Exhibit A, #(3) Exhibit B, #(4) Exhibit C) (O'Connell, Sara) (Entered: 09/07/2018)	
299	09/07/2018	SEALED REPLY in support of Post-Trial Motion re 285 SEALED PATENT MOTION Post-Trial Motions and Renewed Motion for Judgment as a Matter of Law filed by Maxell, Ltd.. (Attachments: #	

#	Date	Proceeding Text	Source
		1 Declaration of Clark Bakewell, # 2 Exhibit 40, # 3 Exhibit 41, # 4 Exhibit 42, # 5 Exhibit 43, # 6 Exhibit 44, # 7 Exhibit 45)(Beaber, Jamie) (Entered: 09/07/2018)	
300	09/11/2018	REDACTION to 299 Sealed Reply to Response to Motion, by Maxell, Ltd.. (Attachments: # 1 Declaration of Clark Bakewell, # 2 Exhibit 40, # 3 Exhibit 41, # 4 Exhibit 42, # 5 Exhibit 43, # 6 Exhibit 44, # 7 Exhibit 45)(Beaber, Jamie) (Entered: 09/11/2018)	
301	09/11/2018	REDACTION to 298 Sealed PATENT Reply to Response to PATENT Motion, Pursuant to Rules 50 and 59 by ZTE USA Inc.. (Attachments: # 1 Affidavit of Sara J. O'Connell, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C)(O'Connell, Sara) (Entered: 09/11/2018)	
302	01/03/2019	REPORT of Mediation by David Folsom. Mediation result: suspended(Folsom, David) (Entered: 01/03/2019)	
303	02/04/2019	Joint MOTION to Stay all Deadlines and Notice of Settlement by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order Order Granting Joint Motion to Stay all Deadlines)(Culbertson, Geoffrey) (Entered: 02/04/2019)	
304	02/04/2019	SEALED ADDITIONAL ATTACHMENTS to Main Document: 303 Exhibit A Memorandum of Understanding (Culbertson, Geoffrey) (Entered: 02/04/2019)	
305	02/04/2019	REPORT of Mediation by David Folsom. Mediation result: Amended report (settlement)(Folsom, David) (Entered: 02/04/2019)	
306	02/05/2019	ORDER granting 303 Motion to Stay All Deadlines and Notice of Settlement. All pending deadlines in the Docket Control Order are STAYED for thirty (30) days pending submission by the parties of the appropriate dismissal papers for this action. Signed by District Judge Robert W. Schroeder, III on 2/5/2019. (slo,) (Entered: 02/05/2019)	
307	03/07/2019	Joint MOTION to Dismiss by Maxell, Ltd.. (Attachments: # 1 Text of Proposed Order)(Culbertson, Geoffrey) (Entered: 03/07/2019)	
308	03/07/2019	Proposed Agreed Judgment . (Culbertson, Geoffrey) (Entered: 03/07/2019)	
309	03/12/2019	ORDER OF DISMISSAL. It is ORDERED that all claims of Plaintiff against Defendant are hereby DISMISSED WITH PREJUDICE. It is further ORDERED that all counterclaims of Defendant against Plaintiff are hereby DISMISSED WITH PREJUDICE. All motions by either party not previously ruled on are hereby DENIED. Each party shall bear its own costs in connection herewith. Signed by District Judge Robert W. Schroeder, III on 3/12/2019. (slo,) (Entered: 03/12/2019)	
310	03/12/2019	FINAL JUDGMENT. It is ORDERED that the above-entitled and numbered cause of action is DISMISSED WITH PREJUDICE and that each party shall bear their own costs. Any remaining relief requested by any party is hereby DENIED. The Clerk of the Court is directed to close the case. Signed by District Judge Robert W. Schroeder, III on 3/12/2019. (slo,) (Entered: 03/12/2019)	
311	03/12/2019	Notice of Filing of Patent/Trademark Form (AO 120) at termination of case. AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (slo,) (Entered: 03/12/2019)	

Patents

Number	Title	Issued	Class	Subclass

Number	Title	Issued	Class	Subclass
5,396,443	Information processing apparatus including arrangements for activation to and deactivation from a power-saving state	03/07/1995	713	321
6,748,317	Portable terminal with the function of walking navigation	06/08/2004	701	433
8,339,493	Electric camera	12/25/2012	348	294
8,736,729	Electric Camera	05/27/2014	348	294
6,408,193	Cellular telephone	06/18/2002	455	571
6,329,794	Information processing device and method for controlling power consumption thereof	12/11/2001	320	132
6,816,491	Multiplexed audio data decoding apparatus and receiver apparatus	11/09/2004	370	394
8,098,695	Multiplexed audio data decoding apparatus and receiver apparatus	01/17/2012	370	536

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End of Document

Patent Assignment Abstract of Title

Total Assignments: 3

Application #: 12845266 **Filing Dt:** 07/28/2010 **Patent #:** 8339493 **Issue Dt:** 12/25/2012
PCT #: NONE **Intl Reg #:** **Publication #:** US20100289907 **Pub Dt:** 11/18/2010
Inventors: Takahiro Nakano, Ryuji Nishimura, Toshiro Kinugasa
Title: ELECTRIC CAMERA

Assignment: 1

Reel/Frame: 030648 / 0217 **Received:** 06/12/2013 **Recorded:** 06/12/2013 **Mailed:** 06/21/2013 **Pages:** 72
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: HITACHI, LTD. **Exec Dt:** 06/07/2013
Assignee: HITACHI CONSUMER ELECTRONICS CO., LTD.
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Correspondent: ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 17TH STREET N., SUITE 1800
ARLINGTON, VA 22209

Assignment: 2

Reel/Frame: 033694 / 0745 **Received:** 09/08/2014 **Recorded:** 09/08/2014 **Mailed:** 09/10/2014 **Pages:** 36
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignors: HITACHI CONSUMER ELECTRONICS CO., LTD. **Exec Dt:** 08/26/2014
HITACHI CONSUMER ELECTRONICS CO, LTD. **Exec Dt:** 08/26/2014
Assignee: HITACHI MAXELL, LTD.
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ARLINGTON, VA 22209

Assignment: 3

Reel/Frame: 045142 / 0208 **Received:** 01/25/2018 **Recorded:** 01/25/2018 **Mailed:** 03/09/2018 **Pages:** 141
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: HITACHI MAXELL, LTD. **Exec Dt:** 10/01/2017
Assignee: MAXELL, LTD.
1 KOIZUMI, OYAMAZAKI, OYAMAZAKI-CHO, OTOKUNI-GUN
KYOTO, JAPAN
Correspondent: NADEEN NSOULI
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CHICAGO, IL 60606

Search Results as of: 12/14/2020 12:30 PM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350. v.2.6
Web interface last modified: Jun 26, 2017 v.2.6

EXHIBIT 1001

US008339493B2

(12) **United States Patent**
Nakano et al.

(10) **Patent No.: US 8,339,493 B2**
(45) **Date of Patent: *Dec. 25, 2012**

(54) **ELECTRIC CAMERA**

(75) Inventors: **Takahiro Nakano**, Hitachinaka (JP); **Ryuji Nishimura**, Yokohama (JP); **Toshiro Kinugasa**, Hiratsuka (JP)

(73) Assignee: **Hitachi, Ltd.**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 136 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/845,266**

(22) Filed: **Jul. 28, 2010**

(65) **Prior Publication Data**

US 2010/0289907 A1 Nov. 18, 2010

Related U.S. Application Data

(60) Continuation of application No. 10/660,710, filed on Sep. 12, 2003, now Pat. No. 8,059,177, which is a division of application No. 09/520,836, filed on Mar. 8, 2000, now Pat. No. 6,765,616.

(30) **Foreign Application Priority Data**

Jan. 11, 2000 (JP) 2000-006064

(51) **Int. Cl.**
H04N 5/335 (2011.01)

(52) **U.S. Cl.** **348/294**; 348/322; 348/312; 348/273

(58) **Field of Classification Search** ..... None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,054,915	A		10/1977	Sugihara
5,170,249	A		12/1992	Ohtsubo et al.
5,187,569	A		2/1993	Tani
5,828,406	A		10/1998	Parulski et al.
5,847,758	A	*	12/1998	Iizuka 348/317
6,195,125	B1		2/2001	Udagawa et al.
6,519,000	B1	*	2/2003	Udagawa 348/220.1
6,661,451	B1		12/2003	Kijima et al.
6,765,616	B1	*	7/2004	Nakano et al. 348/322
6,906,746	B2	*	6/2005	Hijishiri et al. 348/240.2
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Primary Examiner — Luong T Nguyen

(74) *Attorney, Agent, or Firm* — Antonelli, Terry, Stout & Kraus, LLP.

(57) **ABSTRACT**

An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

14 Claims, 8 Drawing Sheets

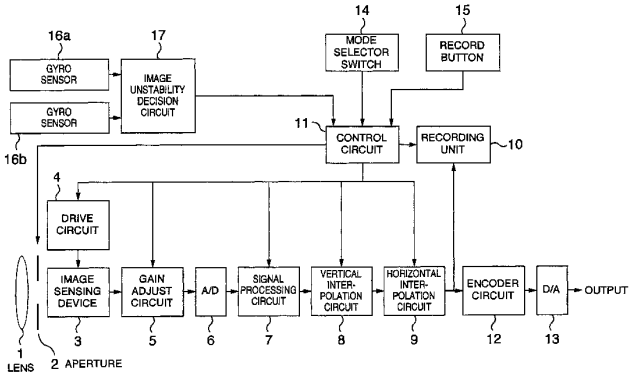


FIG.1

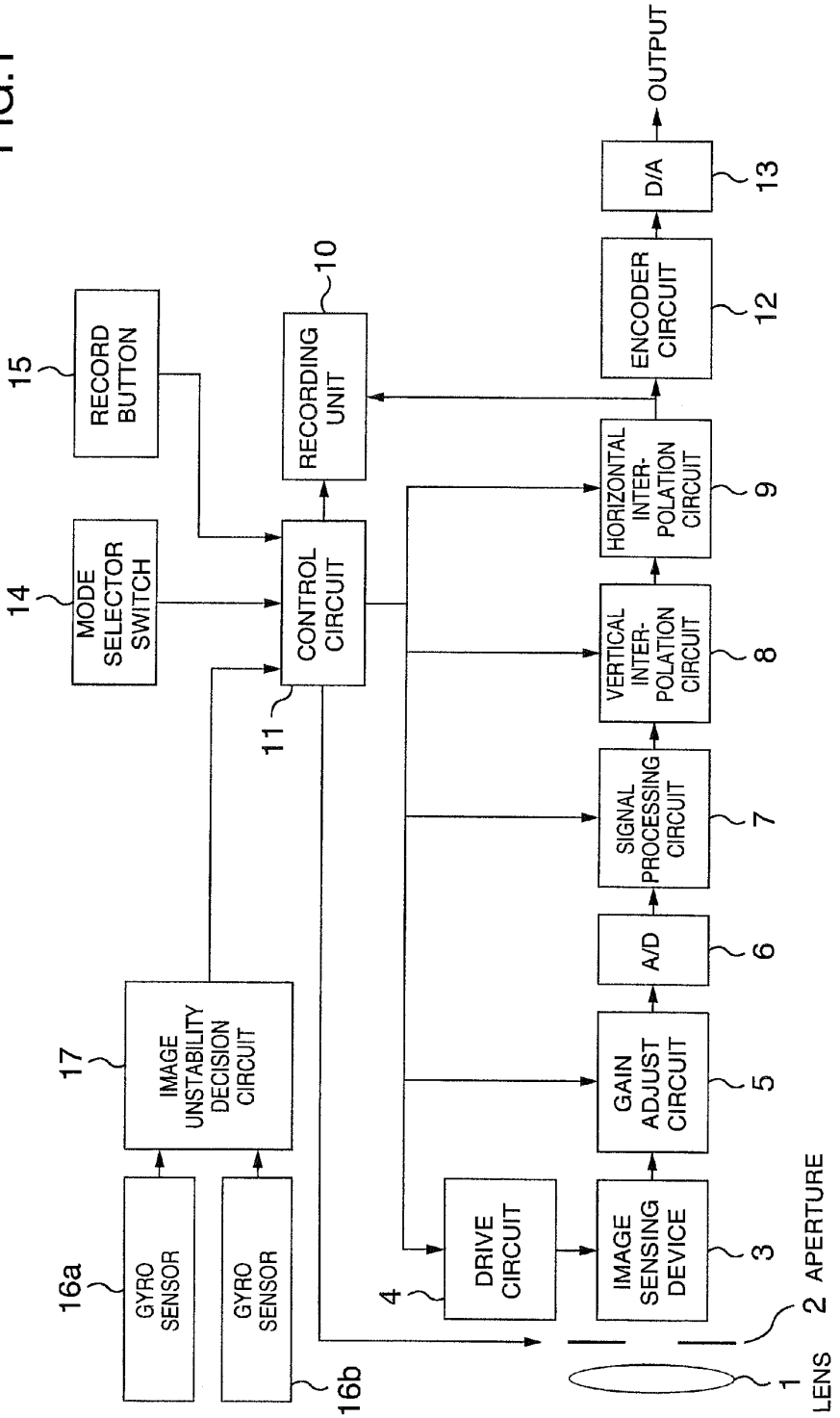

LENS
1
APERTURE
2
IMAGE SENSING DEVICE
3
DRIVE CIRCUIT
4
GAIN ADJUST CIRCUIT
5
A/D
6
SIGNAL PROCESSING CIRCUIT
7
VERTICAL INTER-POLATION CIRCUIT
8
HORIZONTAL INTER-POLATION CIRCUIT
9
RECORDING UNIT
10
CONTROL CIRCUIT
11
ENCODER CIRCUIT
12
D/A
13
OUTPUT
MODE SELECTOR SWITCH
14
RECORD BUTTON
15
GYRO SENSOR
16a
GYRO SENSOR
16b
IMAGE UNSTABILITY DECISION CIRCUIT
17

FIG.2

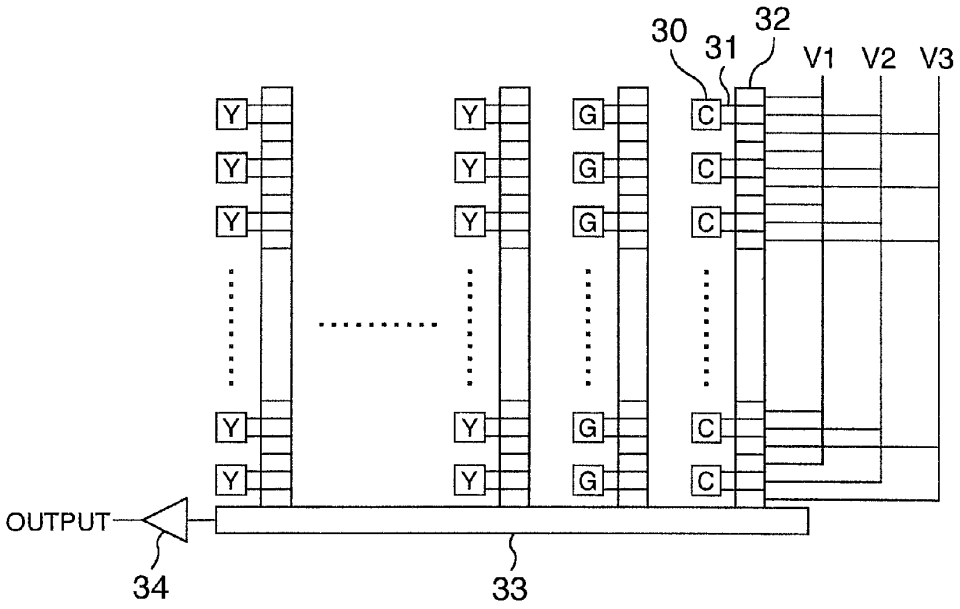

30
31
32
V1
V2
V3
Y
G
C
OUTPUT
34
33

FIG.4

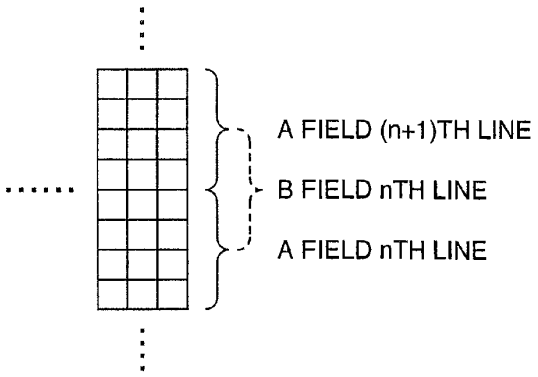

A FIELD (n+1)TH LINE
B FIELD nTH LINE
A FIELD nTH LINE

FIG.3

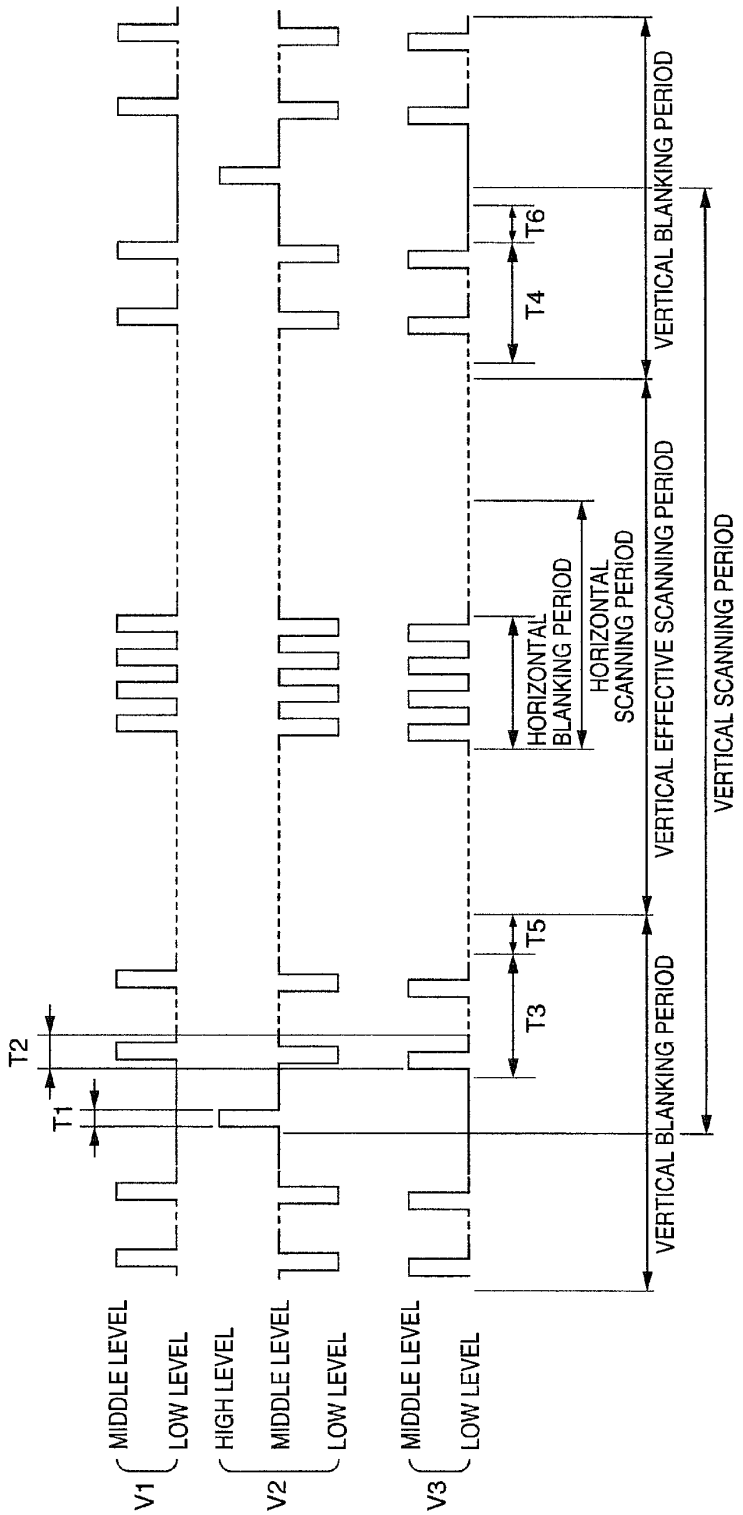

V1
MIDDLE LEVEL
LOW LEVEL
V2
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
V3
MIDDLE LEVEL
LOW LEVEL
T1
T2
T3
T4
T5
T6
HORIZONTAL BLANKING PERIOD
HORIZONTAL SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL EFFECTIVE SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL SCANNING PERIOD

FIG.5

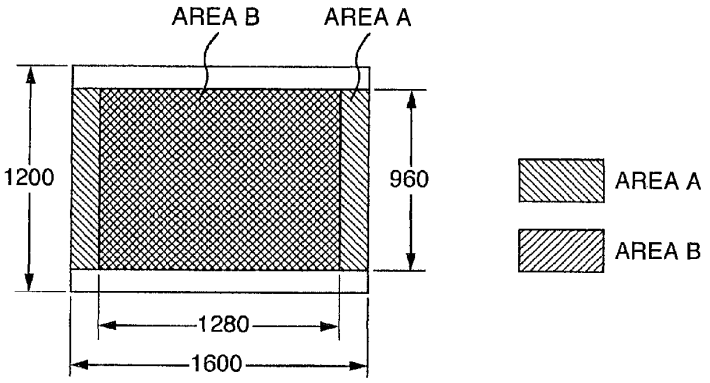

AREA B
AREA A
1200
960
1280
1600
AREA A
AREA B

FIG.6

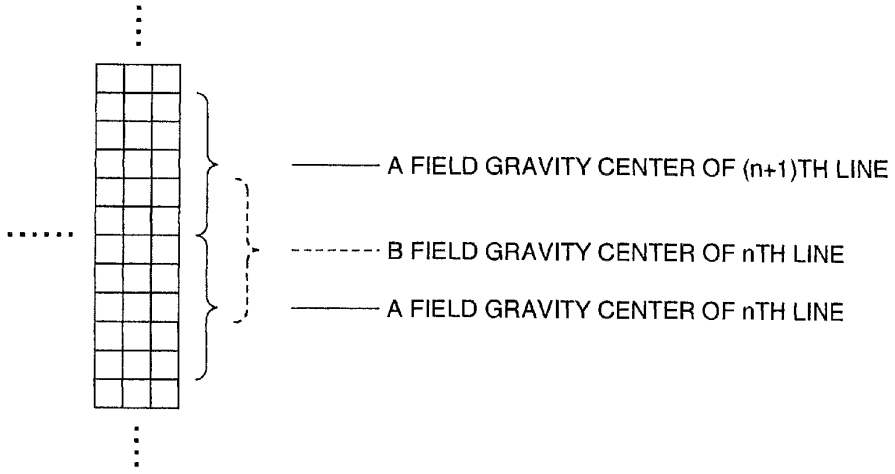

A FIELD GRAVITY CENTER OF (n+1)TH LINE
B FIELD GRAVITY CENTER OF nTH LINE
A FIELD GRAVITY CENTER OF nTH LINE

FIG.7

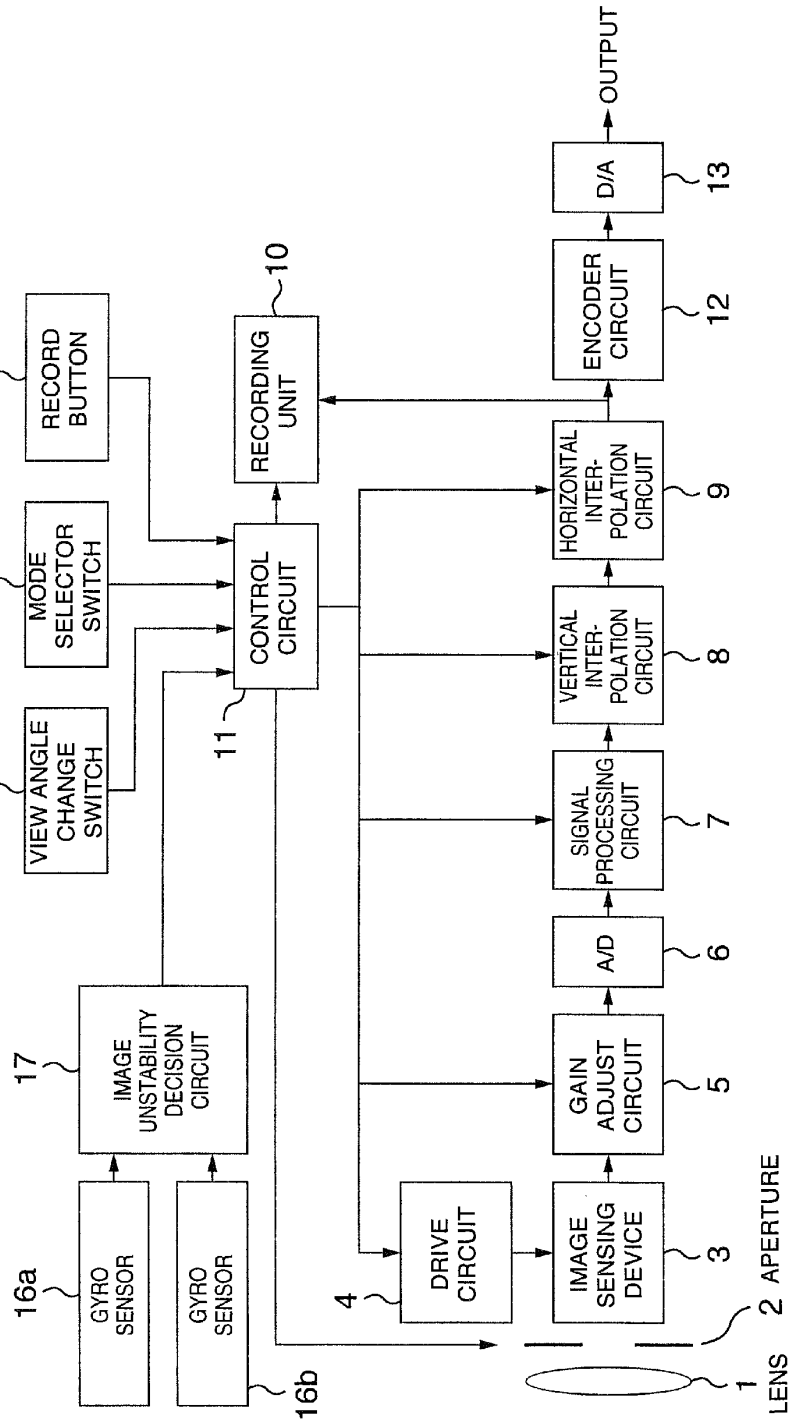

LENS
1
2 APERTURE
IMAGE SENSING DEVICE
3
DRIVE CIRCUIT
4
GAIN ADJUST CIRCUIT
5
A/D
6
SIGNAL PROCESSING CIRCUIT
7
VERTICAL INTER-POLATION CIRCUIT
8
HORIZONTAL INTER-POLATION CIRCUIT
9
RECORDING UNIT
10
CONTROL CIRCUIT
11
ENCODER CIRCUIT
12
D/A
13
OUTPUT
MODE SELECTOR SWITCH
14
RECORD BUTTON
15
VIEW ANGLE CHANGE SWITCH
18
IMAGE UNSTABILITY DECISION CIRCUIT
17
GYRO SENSOR
16a
GYRO SENSOR
16b

FIG.8

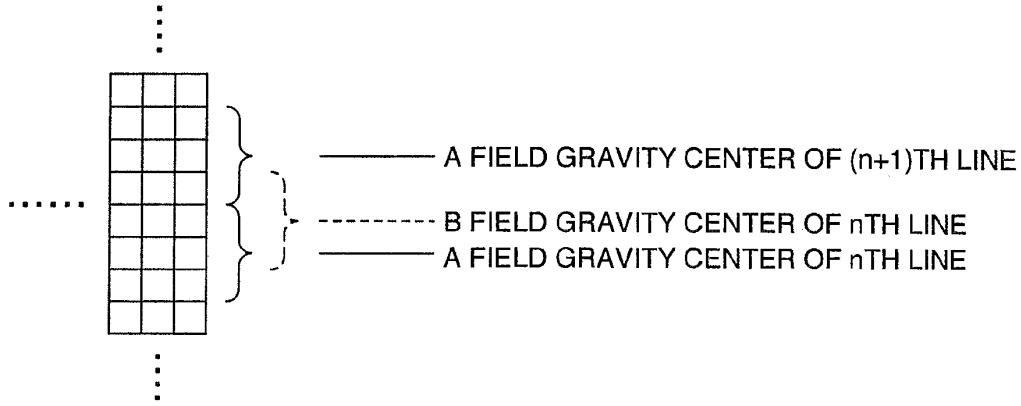

A FIELD GRAVITY CENTER OF (n+1)TH LINE
B FIELD GRAVITY CENTER OF nTH LINE
A FIELD GRAVITY CENTER OF nTH LINE

FIG.9

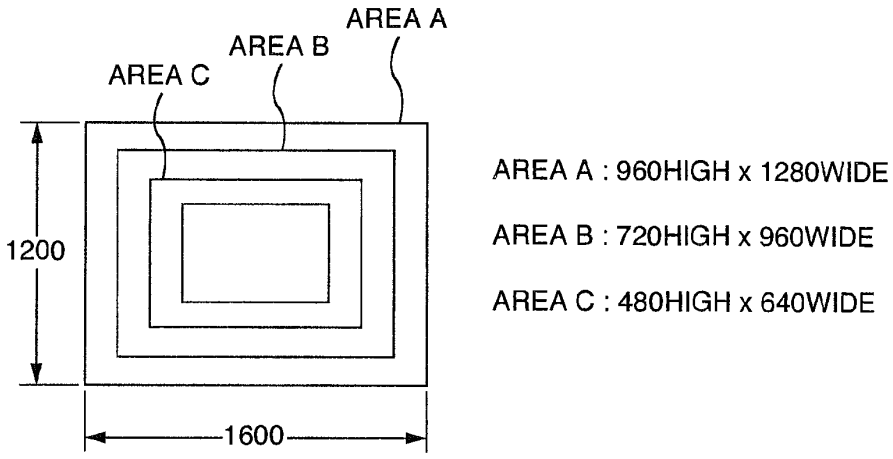

AREA A
AREA B
AREA C
1200
1600
AREA A : 960HIGH x 1280WIDE
AREA B : 720HIGH x 960WIDE
AREA C : 480HIGH x 640WIDE

FIG.10

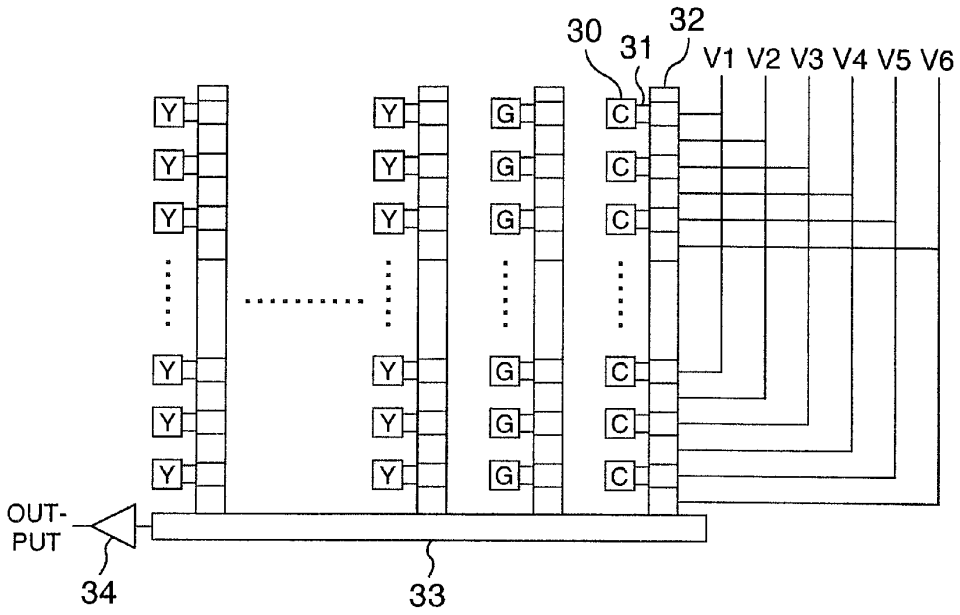


FIG.12

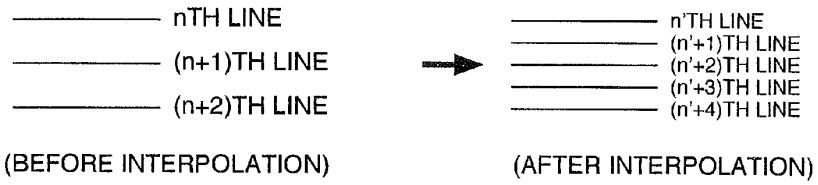


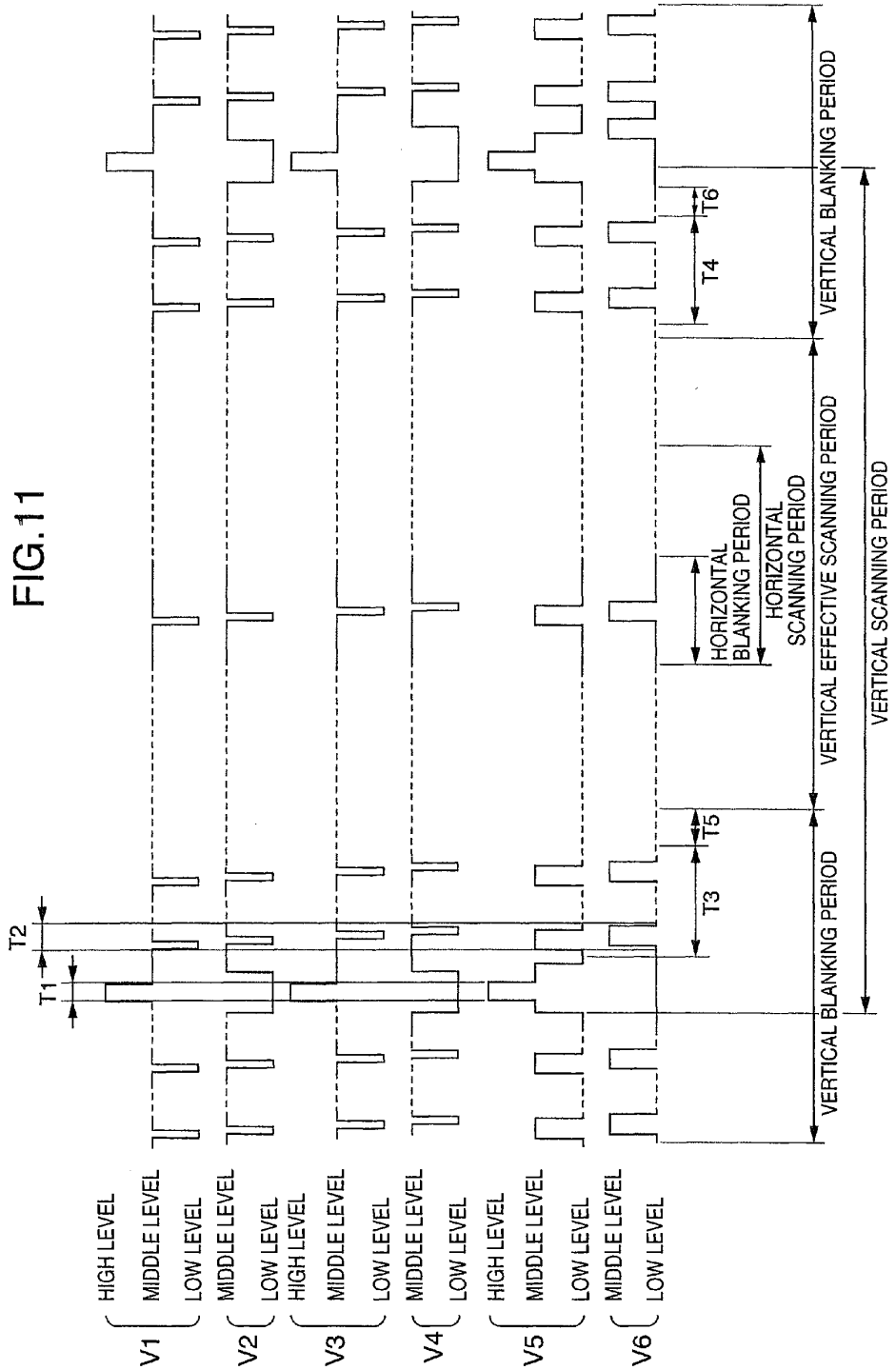
FIG.13A

Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy

FIG.13B

R	G	B
R	G	B
R	G	B
R	G	B
R	G	B

FIG.11


V1
V2
V3
V4
V5
V6
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
T1
T2
T3
T4
T5
T6
HORIZONTAL BLANKING PERIOD
HORIZONTAL SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL EFFECTIVE SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL SCANNING PERIOD

ELECTRIC CAMERA

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. application Ser. No. 10/660,710 Aug. 12, 2003 U.S. Pat. No. 8,059,177, and is related to U.S. application Ser. No. 10/660,711, filed Sep. 12, 2003, now U.S. Pat. No. 7,403,226, issued Jul. 22, 2008, both of which are divisional applications of U.S. application Ser. No. 09/520,836, filed Mar. 8, 2000, now U.S. Pat. No. 6,765,616, issued Jul. 20, 2004, the subject matter of which is incorporated by reference herein.

BACKGROUND OF THE INVENTION

The present invention relates to a photography related to video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

Electric cameras using solid-state image sensors such as CCDs (charge-coupled devices) include a so-called video camera or camcorder for taking moving images and a so-called digital still camera for taking still images. In recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.

In a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL. Therefore, the effective number of vertically arranged pixels or picture elements on the image sensing device used in such a camera is determined to enable television signals to be generated. The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines (the number of scanning lines actually displayed on the monitor which is equal to the number of scanning lines in the vertical blanking period subtracted from the total number of scanning lines in each field). To realize this, the image sensing device has about 480 pixel rows as the standard effective number of vertically arranged pixels. That is, the signals of two vertically adjoining pixels in each field are mixed together inside or outside the image sensing device to generate about 240 scanning lines, and the combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

Some image sensing devices to take moving images according to the NTSC system have an area of pixels for image stabilization added to the area of effective pixel area, thus bringing the effective number of vertically arranged pixels to about 480 or more. In this case, an area beyond 480th pixels is read out at high speed during the vertical blanking period and therefore the signals thus read out are not used as effective signals. Therefore, the video signals can only be generated from those signals coming from the area of about 480 vertically arranged pixels. When such a camera is used to photograph a still image, it is relatively easy to generate a static image signal conforming to, for example, JPEG (Joint Photographic Expert Group) from the signals coming from the same pixel area that is used to take a moving image. A problem remains, however, that the number of vertically arranged pixels obtained is limited to around 480, making it impossible to produce more detailed static image signals.

In a camera having an image sensing device with the area of pixels for image stabilization mentioned above, a method of alleviating this problem may involve using the entire area of effective pixels including the area of image stabilization pixels in photographing a still image. Even when photographing a still image, however, the photographed image needs to be monitored for check and, for that purpose, it is necessary to generate signals conforming to the television system from signals read out from all effective pixels.

An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.

This conventional camera, however, requires a large processing circuit, such as field memory, for signal conversion. Another drawback is that the image sensing device readout cycle is a plurality of times the field cycle, degrading the dynamic resolution. Even with the use of this circuit, the number of pixels obtained as the static image signals is limited to the number of effective pixels used for moving videos plus the area of image stabilization pixels.

In a digital still camera designed for taking still images, there has been a trend in recent years toward an increasing number of pixels used on the moving video image sensing device in order to obtain higher resolution static image signals. When taking a moving image or monitoring the video, it is necessary to generate signals that conform to the television system. The number of pixels on such an image sensing device, however, does not necessarily match the number of scanning lines of the television system and therefore some form of conversion means is required.

The conversion means may involve, as in the video camera with the area of image stabilization pixels, reading out signals from the image sensing device taking a longer time than the field cycle and interpolating them to generate television signals. This method has, in addition to the problem described above, a drawback that the readout cycle increases as the number of pixels increases, further degrading the dynamic resolution.

To mitigate this problem, JP-A-9-270959 discloses an apparatus which mixes together or culls the pixel signals inside the image sensing device to reduce the number of signals to be read and therefore the read cycle. Although this apparatus alleviates the problem of the degraded dynamic resolution, it requires a large processing circuit such as field memory to perform time-axis transformation to generate signals conforming to the television system and the image sensing device itself needs to have a special structure for performing desired mixing and culling.

SUMMARY OF THE INVENTION

The present invention relates to a photography of video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

The conventional electric cameras, as described above, have drawbacks that when taking a still picture by using a video camera, the number of pixels is not sufficient and that when taking a moving image with a still camera, the associated circuit inevitably increases and the dynamic image quality deteriorates. Taking both moving and static images of

satisfactory quality with a single camera is difficult to achieve. In addition to solving the above problems, to obtain good dynamic picture quality by using an image sensing device having a large number of pixels intended for still images requires extracting a pixel area that is used to realize an image stabilizing function. The conventional art and cameras do not offer a means to accomplish this function.

An object of the present invention is to provide an electric camera that solves these problems and which uses an image sensing device with a sufficient number of pixels for still images and enables taking of highly detailed still images and a moving video taking with reduced image quality degradation without increasing circuitry such as field memory. It is also an object of the present invention to provide an electric camera that can also realize the image stabilizing function.

According to one aspect of this invention, the electric camera to realize the above objectives has: an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system; a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of every K pixels to produce a number of lines of output signals which corresponds to the number of effective scanning lines M, K being at least one of integers equal to or less than an integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device); and a signal processing unit to generate image signals by using the output signals of the image sensing device.

As explained above, since this invention eliminates the limit on the number of vertically arranged pixels, an electric camera can be provided which enables taking of highly detailed still images and a satisfactory moving video taking by using an image sensing device with a large enough pixel number even for still images.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram showing the configuration of a first embodiment of an electric camera according to the present invention.

FIG. **2** is a schematic diagram showing the structure of an image sensing device in the first embodiment of the electric camera of the invention.

FIG. **3** is a drive pulse timing diagram in the first embodiment of the electric camera of the invention.

FIG. **4** is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

FIG. **5** is a schematic diagram showing a readout area in the first embodiment of the electric camera of the invention.

FIG. **6** is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

FIG. **7** is a block diagram showing the configuration of a second embodiment of an electric camera according to the present invention.

FIG. **8** is a schematic diagram showing a mixing operation in the second embodiment of the electric camera of the invention.

FIG. **9** is a schematic diagram showing a readout area in the second embodiment of the electric camera of the invention.

FIG. **10** is a schematic diagram showing the structure of an image sensing device in a third embodiment of the electric camera according to the present invention.

FIG. **11** is a drive pulse timing diagram in the third embodiment of the electric camera of the invention.

FIG. **12** is a schematic diagram showing an interpolation operation in the third embodiment of the electric camera of the invention.

FIGS. **13**A and **13**B are schematic diagrams showing the arrangement of color filters in the image sensing device in a fourth embodiment of the electric camera according to the present invention.

DESCRIPTION OF THE EMBODIMENTS

Now embodiments of the present invention will be described by referring to the accompanying drawings. FIG. **1** is a block diagram showing the configuration of one embodiment of an electric camera according to the invention.

In FIG. **1**, reference number **1** represents a lens, **2** an aperture, **3** an image sensing device, **4** a drive circuit, **5** a gain adjust circuit, **6** an analog-digital (A/D) conversion circuit, **7** a signal processing circuit, **8** a vertical interpolation circuit to perform interpolation in a vertical direction, **9** a horizontal interpolation circuit to perform interpolation in a horizontal direction, **10** a recording unit including recording media such as magnetic tape, semiconductor memory and optical disk to record a video signal, **11** a control circuit to control these constitutional elements according to the operating state, **12** an encoder circuit to modulate the video signal into a standard television signal, **13** a digital-analog (D/A) conversion circuit, **14** a mode selector switch to change over the operation mode between the moving video taking and the still image taking, **15** a record button to start or stop the recording, **16***a* and **16***b* gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and **17** an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors.

In the above configuration, light coming from the lens **1** through the aperture **2** is focused on a light receiving surface of the image sensing device **3** where it is converted into an electric signal. In this embodiment the image sensing device **3** is of a CCD type. FIG. **2** shows the structure of this image sensing device **3**. In FIG. **2**, denoted **30** are pixels each formed of a photodiode, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes. Although an arbitrary number of pixels may be used, this embodiment has an array of 1200 pixels vertically and 1600 pixels horizontally. A vertical transfer unit **32** is a CCD which is driven by three phase pulses V**1**, V**2**, V**3**. This CCD has a three-gate structure in which each pixel corresponds to three phase pulses and thus can vertically transfer a signal charge of each pixel independently. Transfer gates **31** for transferring the charge of each pixel to the vertical transfer unit **32** are commonly connected to a gate of the vertical transfer unit **32** that corresponds to the V**2** pulse. An operation to transfer the charge from each pixel to the vertical transfer unit **32** in response to a peak value of the pulse applied to the commonly connected gate and an operation to transfer the charge vertically are performed separately. A horizontal transfer unit **33** horizontally transfers the charges supplied from the vertical transfer units **32** and outputs them successively through an output amplifier **34** from the output terminal.

Referring back to FIG. **1**, the operation performed when the moving video mode is selected by the mode selector switch **14** will be explained. The number of vertically arranged pixels on the image sensing device in this embodi-

ment is 1200, so if the number of effective scanning lines in the field of the NTSC system is assumed to be 240 lines, then vertically mixing five pixels (=1200 pixel rows/240 scanning lines) can match the number of lines of output signals from the image sensing device to the number of effective scanning lines.

However, in this embodiment, to realize the image stabilizing function described later, four vertically arranged pixels are mixed together during motion image taking mode. When four vertically arranged pixels are to be cyclically mixed together, the signals from the area of 960 pixels(=240 scanning lines×4 pixels) out of the 1200 vertically arranged pixels are used as effective signals and the remaining 240 pixels (=1200 (all pixels)−960 (effective pixels)) are not used for image forming. FIG. **3** shows the timing of a vertical drive pulse for the image sensing device in this operation mode, with V**1**, V**2** and V**3** representing three phase drive pulses applied to each gate of the CCD or vertical transfer unit **32**.

In FIG. **3**, in a period T**1** included in the vertical blanking period, the drive pulse V**2** is held high to transfer the signal charge accumulated in each pixel to under the V**2** gate of the vertical CCD. Next, in a period T**2**, while the V**2** pulse is still at middle level, the V**3** pulse is raised from low level to middle level; next, while the V**3** pulse is at middle level, the V**2** pulse is changed from middle level to low level, after which the V**1** pulse is changed from low level to middle level; next, while the V**1** pulse is at middle level, the V**3** pulse is changed from middle level to low level, after which the V**2** pulse is changed to middle level and finally the V**1** pulse is changed from middle level to low level. With this sequence of pulse operations, the signal charges under the V**2** gate for one pixel row are transferred and held again under the V**2** gate.

By repeating this series of operations, the signal charges for a desired number of pixel rows can be transferred. In FIG. **3**, during a period T**3** included in the vertical blanking period before the vertical effective scanning period (the vertical scanning period minus the vertical blanking period which corresponds to the actually displayed image) and during a period T**4** included in the vertical blanking period after the vertical effective scanning period, the above transfer operation for one pixel row is repeated a total of 240 times to transfer the signal charges of the 240 pixel rows not used for image generation to the horizontal transfer unit **33** during the vertical blanking period. For example, if this transfer operation is performed 120 times during the period T**3** and 120 times during the period T**4**, the signal charges from upper 120 pixel rows and lower 120 pixel rows on the light receiving surface are transferred to the horizontal transfer unit **33** during the period T**3** and period T**4** within the vertical blanking period. During each of the subsequent periods T**5** and T**6** in the vertical blanking period, the horizontal transfer unit **33** is driven for a predetermined period to output the charges transferred to the horizontal transfer unit **33** from the output terminal. These charges are not used as valid signals as they are output during the vertical blanking period.

Next, in the vertical effective scanning period of FIG. **3**, the above one-pixel-row transfer operation is performed four times during each horizontal blanking period to transfer the signal charges of four pixel rows to the horizontal transfer unit **33** where they are mixed together. Then, during a horizontal effective scanning period (the horizontal scanning period minus the horizontal blanking period which corresponds to the actually displayed image), the horizontal transfer unit **33** is driven to read out the signal charges from the horizontal transfer unit to produce an output signal conforming to the television system. If the above operation is performed on the A field and if, on the B field, the number of pixel rows transferred during the period T**3** is set to 122 rows and that during the period T**4** is set to 118 rows, then the combination of four pixel rows to be cyclically mixed together shifts by two rows between the two fields, thus allowing the interlaced scanning to be performed as shown in FIG. **4**. (FIG. **4** shows the light receiving surface of the image sensing device and its relation to the displayed screen is vertically inverted.)

Let us return to FIG. **1**. The output signal from the image sensing device **3** is adjusted in gain by the gain adjust circuit **5** and then converted by the A/D conversion circuit **6** into a digital signal. The digital signal is then processed by the signal processing circuit **7** that performs color signal processing and luminance signal processing, such as generation of color signals, gamma correction, white balance processing and outline enhancement. The image sensing device in this embodiment has an array of vertical stripes of yellow (Ye), green (G) and cyan (Cy) color filters, so the color signals for Ye, G and Cy are obtained as a series of color points from one line of output signals at all times no matter how many pixels are vertically combined. From these color signals three primary color signals R, G, B can be obtained from the following calculations.

$$R=Ye-G$$

$$B=Cy-G$$

$$G=G$$

The R, G and B signals undergoes the white balance processing and gamma correction processing in the signal processing circuit **7** and are then converted into color difference signals such as R-Y, B-Y or U and V. The luminance signals and the color difference signals are then entered through the vertical interpolation circuit **8** into the horizontal interpolation circuit **9**. In this operation state the signals just pass through the vertical interpolation circuit **8** without being processed. The horizontal interpolation circuit **9** performs interpolation on the signals in the horizontal direction.

FIG. **5** shows the light receiving surface of the image sensing device. As described above, in the operating state of this embodiment, the signals read out during the vertical effective scanning period correspond to an area having 960 of the 1200 vertically arranged pixels and a horizontal width of 1600 pixels, as shown shaded at A in FIG. **5**. If the entire light receiving surface of the image sensing device has a 4-to-3 (width to height) aspect ratio, the shaded area A is more laterally elongate than this aspect ratio. Hence, if the signals of all horizontal pixels of the light receiving surface are displayed, for example, on an NTSC standard television monitor with the 4-to-3 aspect ratio, the image displayed is compressed horizontally and looks vertically elongate, compared with the original image. It is therefore necessary to output during the horizontal effective scanning period only those signals coming from a pixel area with the horizontal width conforming to the aspect ratio of the television system, as shown by a shaded area B. When the television system has an 4-to-3 aspect ratio, the number of pixels in the horizontal width of the shaded area B is 1280 (=960 (vertical effective pixels)×4/3).

Returning back to FIG. **1**, the horizontal interpolation circuit **9** performs interpolation processing on the signals from the horizontal 1280 pixels to expand the signals so that they can be output over the entire horizontal effective scanning period. It also performs switching among different clocks as required. With the above operation, an area having 960 pixels in height and 1280 pixels in width is demarcated from the light receiving surface as signals conforming to the television

system. Then, the luminance signal and the color difference signal are encoded by the encoder circuit **12** into television signals, which are then converted by the D/A conversion circuit **13** into analog signals for output. When the recording is specified by the record button **15**, the signals are recorded by the recording unit **10**. At this time, the signals may be compressed in the MPEG (Moving Picture Expert Group) format.

Next, the image stabilizing operation will be explained. Image-unstability information obtained by the gyro sensors **16***a*, **16***b* that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit **17**, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T**3** and T**4** in FIG. **3** and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit **9**.

The operation during the moving video mode has been described above. Next, the operation performed when the static image mode is selected by the mode selector switch **14** will be explained.

In the static image mode, too, until the recording is requested by the record button **15**, the camera outputs signals compatible with the television system to monitor the angle of view. Unlike the moving video photographing, all of the effective pixels on the image sensing device are used in this embodiment during the still image photographing to produce signals with as high a resolution as possible. Hence, during the monitoring the television signals need to be generated from the signals coming from the entire pixel area.

The image sensing device of this embodiment has 1200 vertically arranged pixels, and the number of lines of output signals from the image sensing device can be made to match the number of effective scanning lines of NTSC system, which is assumed to have 240 scanning lines, by vertically mixing five pixels (=1200/240). To make the image sensing device operate in this manner, the one-pixel-row transfer operation is performed five times during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of FIG. **3**. With this operation, the signal charges of five pixel rows can be mixed by the horizontal transfer unit **33**. As for the transfer operations during the periods T**3** and T**4** in the vertical blanking period, because the interlaced scanning is carried out, only two pixel rows are transferred during the period T**3** on the B field, with no transfer operations performed in other vertical blanking periods (In this embodiment, 1200/240=5 with no remainder produced, so no further transfer is necessary; if, however, a remainder occurs, the remaining pixels need only be transferred during the periods T**3** and T**4**).

The charges mixed by the horizontal transfer unit **33** are read out by driving the horizontal transfer unit **33** during the horizontal effective scanning period. With the above operations, the signal charges of all pixels on the image sensing device can be read out in a manner conforming to the television system. The output signal from the image sensing device **3** is, as during the moving image photographing, adjusted in gain by the gain adjust circuit **5** and converted by the A/D conversion circuit **6** into a digital signal, which is then subjected to the color signal processing and the luminance signal processing in the signal processing circuit **7** before being entered into the vertical interpolation circuit **8**. During the static image monitoring, the vertical interpolation circuit **8** performs a vertical gravity center correction on the received signals.

FIG. **6** shows combinations of pixels to be cyclically mixed on the A field and the B field and also the vertical position of the gravity center of the mixed signals. In the interlaced scanning, scanning lines of the A field and the B field are located at the centers of adjoining scanning lines on other field. Hence, the signal samplings in the camera system for the two fields must be 180 degrees out of phase in the vertical direction. In the operating state of this embodiment, however, because five pixels are mixed together, the gravity centers of the output signals for the A field and the B field are deviated 36 degrees (=½ pixel or 1/10 the line-to-line distance on the same field) from the ideal sampling phase difference of 180 degrees, as shown in FIG. **6**. To correct this requires generating a signal from two adjoining output lines by interpolation. For example, if we let an nth output line on a field be Sn and an (n+1)th output line on the same field be Sn+1, then a signal Sn' obtained by calculating Sn'=(Sn×9/10)+(Sn+1×1/10) is one whose gravity center is shifted by 1/10 output line from the gravity center of the nth output line toward the (n+1)th output line. The above calculation can also be performed on the signals for the B field to correct the gravity center deviation of sampling. In this embodiment, however, to equalize the effects of interpolation of the A field and the B field, the following calculations are performed to correct the nth output line by 1/20 line toward the (n-1) line on the A field and by 1/20 line toward the (n+1)th line on the B field.

$$A \text{ field: } Sn' = (Sn \times 19/20) + (Sn-1 \times 1/20)$$

$$B \text{ field: } Sn' = (Sn \times 19/20) + (Sn+1 \times 1/20)$$

While this embodiment performs the interpolation based on the calculation of two adjoining lines of output signals, a greater number of lines may be used for the interpolation processing. The output signal of the vertical interpolation circuit **8** is supplied to the horizontal interpolation circuit **9**, which in this operating state does nothing but passes the signal. Then, as in the case of the moving image photographing, the signal is encoded by the encoder circuit **12** into a television signal, which is then converted by the D/A conversion circuit **13** into an analog signal for output. As described above, the television signals can be generated from all of the pixel area of the image sensing device also during the static image mode.

Next, the operation performed when the recording is requested by the record button **15** will be described. During the monitoring in the static mode, the signals are mixed together inside the image sensing device to reduce the number of signals and thereby generate television signals. During recording, however, the mixing processing is not performed and all the pixel signals need to be read out independently of each other in order to produce high resolution signals. To realize this, the one-pixel-row transfer operation is performed only once during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of FIG. **3**. This causes only the signal charges for one pixel row to be transferred into the horizontal transfer unit **33**, which is then driven to read out the signal charges for one pixel row. Repeating this operation the number of times equal to the number of vertically arranged pixel rows enables the signal charges of all pixel rows to be read out independently

of each other. The transfer operation is not done during the periods T3 and T4 in the vertical blanking period.

The signal charges thus read out are adjusted in gain by the gain adjust circuit **5** and converted by the A/D conversion circuit **6** into digital signals, which are then subjected to the color signal processing and the luminance signal processing in the signal processing circuit **7**, after which the signals are supplied through the vertical interpolation circuit **8** and the horizontal interpolation circuit **9** to the recording unit **10** where they are recorded. At this time, no interpolation processing is performed by the vertical interpolation circuit **8** or horizontal interpolation circuit **9**. The recording unit **10** may compress the signals in the JPEG (Joint Photographic Expert Group) format, for example. Because during the static image recording, no television signal can be generated, an image immediately before starting the recording or a single color image is output as the television signal for monitoring purpose. With the above operation, high resolution signals obtained from all the pixels of the image sensing device can be recorded. Although in this embodiment the recording unit is used commonly for the moving video mode and for the static image mode, dedicated recording units may be provided separately for these modes.

As explained above, since there is no limit on the number of vertically arranged pixels in this embodiment, an image sensing device with a large enough pixel number even for still images can be used to photograph highly detailed still images and satisfactory moving images.

Further, the signal mixing and the vertical signal transfer during the vertical blanking period allow the signals from the image sensing device with a large number of pixels to be read out in a manner that conforms to the television system. This in turn can reduce image quality degradation and realize the moving image photographing with an image stabilizing function and the monitoring during still image photographing.

Only the output signals from that horizontal segment which virtually corresponds to the television system's aspect ratio with respect to the vertical segment are extracted and output over the entire horizontal effective scanning period of the television system. This ensures that the output signals obtained conform to the television system's aspect ratio regardless of the extracted vertical segment position.

Further, the image sensing device is driven in such a way as to shift the position of the pixels to be cyclically mixed together every display cycle of the television system in order to output interlaced signals. With this arrangement, the interlaced scanning can be performed even when an image sensing device with a large number of pixels is used.

Further, the output signals produced by the mixing are interpolated so that the gravity centers of the output signals interlaced every display cycle have a phase difference of 180 degrees in the vertical direction. This ensures that the interlaced output signals have no deviation from the ideal 180-degree phase difference during interlacing even when an interlace phase deviation would normally occur, as when odd numbered pixels are mixed together.

In this embodiment, the image sensing device has 1200 vertically arranged pixels, and four pixels are mixed together during the moving video mode and five pixels during the static image mode. Because the area of image-stabilization pixels may or may not be used and set to any desire size, the number of pixels to be cyclically mixed together in each mode needs only to be equal to or less than the integral part of a quotient of the number of vertically arranged pixels divided by the number of television system's effective scanning lines (in the above example, 5 or less). (The number of vertically arranged pixels does not need to be divisible and, in the above example, may be more than 1200).

The number of vertically arranged pixels for static image photographing needs only to be three or more times the number of effective scanning lines on each field of the television system. In this embodiment the vertically adjoining pixels are mixed together to reduce the number of output lines from the image sensing device during the vertical effective scanning period. The number of lines of output signals can also be reduced by a so-called culling operation, by which only one line of signal charges of pixels is read out for every predetermined number of lines.

While in this embodiment the vertical transfer unit of the image sensing device is formed as a CCD that is driven by three phase pulses for each pixel, the image sensing device may have any desired structure as long as it can realize the mixing or culling of pixels that meets the above conditions.

Although this embodiment described the case of NTSC system, the invention can also be applied to other television systems, such as PAL standard, with different numbers of effective scanning lines.

In summary, a variety of constructions essentially equal in the working principle to this embodiment can be realized by the use of an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field of the television system and which allows the vertical mixing or culling of that number of pixels which is at least one of integers equal to or less than the integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device).

Next, another embodiment of the present invention will be described by referring to FIG. **7** showing the configuration of the embodiment. The configuration shown in FIG. **7** differs from that of FIG. **1** in that it has a view angle change switch **18**. In FIG. **7** constitutional elements identical with those shown in FIG. **1** are assigned like reference numbers and explanations on the constitutional elements performing the same operations as those in FIG. **1** are omitted here.

The operations of the moving video mode, the monitoring during the static image mode and the static image recording are similar in normal condition to the operations of the previous embodiment which was explained with reference to the configuration diagram of FIG. **1**. An operation performed when during the moving video mode a request to change the angle of view is made by the view angle change switch **18** will be described.

In the normal condition of this embodiment, as explained in the previous embodiment, the mixing of four vertically arranged pixels, the vertical transfer during the vertical blanking period and the horizontal interpolation processing are performed to extract an area of 960 pixels in height and 1280 pixels in width from the entire pixel area to generate television signals. When a view angle change (which means a zooming function without image quality degradations in the vertical direction) is requested by the view angle change switch **18**, three vertically arranged pixels are mixed together and the signals from the excess vertically arranged pixels are read out during the vertical blanking periods before and after the vertical effective scanning period.

In this embodiment, signals of 480 pixels (=1200−240×3) or 160 lines of output signals after mixing (=480/3) need to be read out during the vertical blanking period. This allows the signals of 720 vertically arranged pixels to be read out as 240 lines of output signals conforming to the television system. To carry out this reading requires, in the pulse timing diagram of

FIG. **3**, transferring the signals of three pixel rows during each horizontal blanking period in the vertical effective scanning period and also transferring a total of 480 pixel rows (=160 lines of output signals) during the T**3** and T**4** periods in the vertical blanking period. The combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

The output signals of the image sensing device **3** are supplied to the gain adjust circuit **5**. Because the signal level produced as a result of the 3-pixel mixing is ¾ the signal level of the 4-pixel mixing, the again of the gain adjust circuit **5** is increased to ⅔ the gain of the 4-pixel mixing to make the 3- and 4-pixel-mixed input signal levels to the subsequent circuit equal. Then, the signals are processed by the A/D conversion circuit **6** and the signal processing circuit **7** before being supplied to the vertical interpolation circuit **8**. The combinations of pixels to be cyclically mixed on the A field and the B field and the vertical positions of the gravity centers of the mixed signals are shown in FIG. **8**. As in the static image monitoring of the previous embodiment, the phase difference between the two fields is 180 degrees. Because the sampling phases of the fields are deviated from the ideal 180-degree phase difference, the vertical position of the gravity centers are corrected by the vertical interpolation circuit **8**. The amount of phase deviation in this operating state is 60 degrees (=½ pixel or ⅙ the line-to-line distance on the same field). To correct the phase deviation evenly on the both fields, the following calculations should be performed.

$$A \text{ field: } Sn' = (Sn \times 11/12) + (Sn-1 \times 1/12)$$

$$B \text{ field: } Sn' = (Sn \times 11/12) + (Sn+1 \times 1/12)$$

As described earlier, the interpolation processing may use three or more output lines. Next, the horizontal interpolation circuit **9** horizontally expands the signals from that horizontal segment which corresponds to the 4-to-3 aspect ratio with respect to the 720 vertically arranged pixels (i.e., signals from a horizontal 960-pixel segment (=1600×720/1200) in this operating state) so that the expanded signals can be output during the entire horizontal effective scanning period. With the above operation, an area of 720 pixels in height and 960 pixels in width can be extracted from the light receiving surface.

Next, when the view angle change is requested again by the view angle change switch **18**, two vertically arranged pixels are mixed together, an area of 480 vertically arranged pixels is read out during the vertical effective scanning period, and the horizontal interpolation circuit **9** expands the signals from the horizontal 640-pixel segment and outputs the expanded signals during the entire horizontal effective scanning period to extract an area of 480 pixels in height and 640 pixels in width. (During the two-pixel mixing, because the interlace phase deviation does not occur, the gravity center position correction by the vertical interpolation circuit **8** is not performed.) If a further view angle change is requested by the view angle change switch **18**, the operation is restored to a normal state where four vertically arranged pixels are mixed together.

As a result of the above operation, the area extracted from the light receiving surface of the image sensing device can be changed to three different areas: (A) 960 pixels high by 1280 pixels wide, (B) 720 pixels high by 960 pixels wide and (C) 4880 pixels high by 640 pixels wide. That is, the angle of view can be changed to three different angles. With the area A produced by the 4-pixel mixing taken as a reference, the area B produced by the 3-pixel mixing can provide an image enlarged by 1.33 times and the area C produced by the 2-pixel mixing can provide an image enlarged by two times. It should be noted here that because the three different areas are chosen by changing the number of pixel to be cyclically mixed together in order to make the number of the effective output lines from the imaging device agree with the number of the effective scanning lines of the television system, the angle of view can be changed while maintaining a good image with no image quality degradation in the vertical direction, when compared with an ordinary so-called digital zoom which generates effective scanning lines of signals by interpolating a small number of output lines. During the monitoring of a static image, too, it is possible to perform the similar operation of changing the angle of view by changing the number of pixel rows to be cyclically mixed together.

As described above, in addition to the advantages provided by the previous embodiment, this embodiment can also realize the view angle change with little image quality degradation even for still images by using an image sensing device with a large number of pixels and changing the number of pixels to be cyclically mixed together.

Further, because changes in signal level caused when the number of pixels to be cyclically mixed is changed are absorbed by the gain adjust means, the input signal level to the subsequent signal processing means can be kept constant.

While in this embodiment, the view angle change is performed by the view angle change switch **18**, the angle of view may be changed continuously by a zoom switch. In this case, when the magnification factor does not reach the value that is obtained by changing the pixel mixing, the digital zoom performs the ordinary interpolation processing. In this embodiment, when the magnification factor is 1 or more and less than 1.33, the 4-pixel mixing is performed; for the factor of 1.33 or more and less than 2, the 3-pixel mixing is done; and for the factor of 2 or higher, the 2-pixel mixing is carried out. The mixing operation may be interlocked with an optical zooming mechanism.

Regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, this embodiment, as in the previous embodiment, may also use an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of those numbers of pixels which are at least two of integers equal to or less than the integral part of a quotient of N divided by M. The use of this image sensing device can form a variety of constructions essentially equal in the working principle to this embodiment.

Next, a further embodiment of the present invention will be described. The overall configuration of this embodiment is similar to that of FIG. **1**, except that the inner structure of the image sensing device **3** is different. The configuration of the image sensing device in this embodiment is shown in FIG. **10**. In FIG. **10**, denoted **30** are pixels formed of photodiodes, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in so-called vertical stripes.

In this embodiment, the image sensing device has an array of pixels measuring 864 pixels vertically and 1152 pixels horizontally. A vertical transfer unit **32** is a CCD which is driven by six phase pulses V**1**, V**2**, V**3**, V**4**, V**5**, V**6**. This CCD has a two-gate structure in which each pixel corresponds to two phase pulses and six gates corresponding to the six phase pulses are repeated for every three pixels. Transfer gates **31** for transferring the signal charge of each pixel to the vertical transfer unit **32** are commonly connected to respective gates

of the vertical transfer unit **32** corresponding to the pulses V**1**, V**3**, V**5**. An operation to transfer the signal charge from each pixel to the vertical transfer unit **32** in response to peak values of pulses applied to the commonly connected gates and an operation to transfer the charge vertically are performed separately.

A horizontal transfer unit **33** horizontally transfers the charges supplied from the vertical transfer units **32** and outputs them successively through an output amplifier **34** from the output terminal. This image sensing device, unlike the one in the previous embodiment, cannot vertically transfer all pixels independently of each other, but can mix together the signal charges of three vertically adjoining pixels inside the vertical transfer unit **32** before transferring them.

First, the operation performed in this embodiment during the moving video mode will be explained. In the image sensing device of this embodiment the effective number of vertically arranged pixels is 864. If three pixels are vertically mixed, the signals of the 720 (=240×3) of the 864 vertically arranged pixels can be used as the effective signals and the remaining **144** (=864−720) pixels can be used as the image-unstability correction pixel area.

FIG. **11** shows the timings of vertical drive pulses for the image sensing device of FIG. **10** during this operation mode, with V**1**, V**2**, V**3**, V**4**, V**5**, V**6** representing the six phase drive pulses applied to the respective gates of the CCD or vertical transfer unit **32**. In FIG. **11**, during a period T**1** included in the vertical blanking period, the drive pulses V**1**, V**3** and V**5** are held high to cause the signal charge of each pixel to be transferred to under the V**1**, V**3** and V**5** gates of the vertical CCD. Then, the V**2** and V**4** pulses are changed from low level to middle level to mix the charges of the adjoining three pixels. After the mixing, the V**5** pulse is changed from middle level to low level to hold the mixed signal charges under the V**1**, V**2**, V**3**, V**4** gates.

Next, a series of operations performed during a period T**2** (changing the drive pulses from middle level to low level or from low level to middle level in the order of V**1**, V**2**, V**3**, V**4**, V**5** and V**6**) causes one mixed output line (3 pixel rows) to be transferred and held again under the V**1**, V**2**, V**3**, V**4** gate. By repeating this series of operations, a desired number of output lines of mixed signal charges can be transferred.

In FIG. **11**, during a period T**3** included in the vertical blanking period before the vertical effective scanning period and during a period T**4** included in the vertical blanking period after the vertical effective scanning period, the transfer operation for one output line is repeated a total of 144 times to transfer 144 output lines of signal charges not used for image forming to the horizontal transfer unit **33** at high speed during the vertical blanking periods. During subsequent periods T**5** and T**6** in the vertical blanking periods, the horizontal transfer unit **33** is driven for predetermined periods to output the signal charges transferred to the horizontal transfer unit **33** from the output terminal.

Next, in the vertical effective scanning period of FIG. **11**, the one-output-signal-line transfer operation is performed during each horizontal blanking period. Then, during the horizontal effective scanning period, the horizontal transfer unit **33** is driven to read out the signal charges from the horizontal transfer unit **33**. With this operation the signal charges of three pixels mixed together can be read out in a way conforming to the television system. As shown in FIG. **11**, the signals for the A field are mixed by changing the V**2** and V**4** pulses to middle level after transferring the signals from the pixels to the vertical transfer unit **32**. The signals for the B field, on the other hand, are mixed by changing the V**2** and V**6** pulses to middle level. With this mixing method, the combinations of pixels to be cyclically mixed together can be changed from one field to another, thereby realizing the interlaced scanning. The output signals from the image sensing device are processed in the similar manner to that of the previous embodiment. A vertical interpolation circuit **8** performs the gravity center correction, as in the 3-pixel mixing in the previous embodiment, and a horizontal interpolation circuit **9** performs interpolation processing to match the aspect ratio with that of the television system.

Next, the operation during the monitoring in the static image mode will be explained. It is assumed that the still image photographing is done by using all effective pixels of the image sensing device, as in the previous embodiment. The image sensing device of this embodiment has **864** vertically arranged pixels and, when 3-pixel mixing is done as in the moving video taking, the number of output lines is 288 (=864/3), which means that these signal lines cannot be read out in a manner conforming to the television system. Hence, during the monitoring in the static image mode, vertical 6-pixel mixing is performed. The 6-pixel mixing can be achieved by transferring to the horizontal transfer unit **33** in each horizontal blanking period two output lines of signal charges each of which line has been generated by vertically mixing three pixels within the vertical transfer unit **32**. The 6-pixel mixing can reduce the number of output lines from the image sensing device down to 144 (=864/6) lines. The output signals of the image sensing device that were reduced to 144 output lines are interpolated by the vertical interpolation circuit **8** to transform the 144 output lines of signals into 240 lines of signals, which conform to the television system. To generate 240 lines of signals from the 144 lines requires interpolation processing that generates five lines from three lines (144/240=3/5).

FIG. **12** shows how the interpolation is performed using two adjoining output lines. Let three output lines of the image sensing device be n, n+1 and n+2. The five output lines of signals can be generated from the following calculations.

$$n'=n$$

$$n'+1=n/2+(n+1)/2$$

$$n'+2=n+1$$

$$n'+3=(n+1)/2+(n+2)/2$$

$$n'+4=n+2$$

Three or more output lines of signals may be used for interpolation processing. With the above operation, television signals can be generated by using signals of all pixels of the image sensing device also during the monitoring in the static image mode.

Next, the operation performed when the recording is requested by the record button **15** will be explained. In the recording process, the mixing processing is not performed and signals of all pixels need to be read independently of each other in order to obtain high-resolution signals. To realize this, the aperture **2** is first closed and then, during the period T**2** in the pulse timing diagram of FIG. **11**, only the V**1** pulse is raised to high level to transfer the signal charge of only the pixel adjacent to the V**1** gate to the vertical transfer unit **32**. Then, the vertical transfer unit **32** and the horizontal transfer unit **33** are successively driven to read out the signal charges. Similarly, the V**3** pulse is raised to high level to read the signal charge of the pixel adjacent to the V**3** gate, followed by raising the V**5** pulse to high level to read the signal charge of the pixel adjacent to the V**5** gate. With the above processing, the signal charges of all pixels can be read out independently in three successive operations. The signal charges thus read out are

recorded in the recording unit **10**. At this time, they are rearranged properly to reconstruct the pixel arrangement on the light receiving surface of the image sensing device.

As described above, this embodiment offers the following advantages. If the number of vertically arranged pixels is not an integral multiple of the number of scanning lines of the television system, the signals conforming to the television system can be generated from the whole area of effective pixels by performing the pixel mixing and the vertical interpolation.

In this embodiment, as in the previous embodiment, regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, a variety of constructions essentially equal in the working principle to this embodiment can be realized by using an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of that number of pixels which is greater by at least one than the integral part of a quotient of N divided by M.

Next, a further embodiment of the present invention will be explained. This embodiment differs from the previous embodiments in that the image sensing device have different arrangements of color filters. FIGS. **13**A and **13**B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals. FIG. **13**A shows a color filter arrangement on the image sensing device in which white filters (W=passing all colors) are used instead of the green (G) filters used in the previous embodiment. The R, G, B signals can be obtained by the following calculations.

$$R=W-Cy$$

$$G=Ye+Cy-W$$

$$B=W-Ye$$

When this color filter arrangement is used, a higher sensitivity can be obtained than the color filter arrangement of the previous embodiment. FIG. **13**B show a color filter arrangement that uses, in stead of complementary colors, color filters that pass the primary colors R, G, B. This color filter arrangement can directly produce the primary color signals, R, G, B and can provide a camera with good color purity and good color S/N.

With the above color filter arrangements, it is possible to produce color signals corresponding to the three kinds of color filters from each line of output signals at all times no matter how many pixels are vertically mixed or culled. Therefore, color signals conforming to the television system can be generated easily.

The invention claimed is:

1. An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines, wherein N is equal to or greater than three times a number of effective scanning lines M of a display screen;

a signal processing unit, that generates image signals by using the output signals of the image sensing device; and

a display unit with the display screen, to display an image corresponding to the image signals;

wherein during monitoring in a static image mode, the signal processing unit generates the image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K1 pixels;

wherein during recording in a moving video mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K2 pixels, a value of K1 being different from a value of K2; and

wherein during recording in the static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in the N number of vertically arranged pixel lines, to provide N pixel lines.

2. An electric camera according to the claim **1**, wherein the value K1 is larger than the value K2.

3. An electric camera according to the claim **1**, wherein during the moving video mode, the signal processing unit generates the image signals by using the signal charges mixed or culled at pixel intervals of K2 pixels.

4. An electric camera according to the claim **3**, comprising:

an image-instability detector which detects an image-instability of the electric camera;

wherein the signal processing unit generates image signals by using the part of signal charges mixed or culled at pixel intervals of K2 pixels, the part being changed according to an amount of image-instability detected by the instability detector to correct the image-instability, during the moving video mode.

5. An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines;

a signal processing unit that generates image signals by processing the output signals of the image sensing device; and

a display unit with a display screen, that displays an image corresponding to the image signals;

wherein when recording an image in a static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

wherein when monitoring the image in the static image mode, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and

wherein when recording the image in a moving video mode, the signal processing unit generates the image signals by using a portion of, or the entirety of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.

6. An electric camera according to the claim **5**, further comprising:

an image-instability detector which detects an image-instability of the electric camera; and

wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates the image signals by changing the

pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

7. An electric camera according to the claim **5**, wherein a value of the first distance is larger than a value of the second distance.

8. An electric camera according to the claim **5**, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of the display screen.

9. An electric camera according to the claim **8**, wherein the fixed parameter is equal to three.

10. A method for operating an electric camera, wherein the electric camera includes the features of

an image sensing device with a light receiving surface having an array of pixels arranged vertically and horizontally in a grid pattern with an N number of vertically arranged pixel lines,

a signal processing unit that generates image signals by processing the output signals of the image sensing device, and

a display unit with a display screen that displays an image corresponding to the image signals, the method comprising:

selecting between a static image mode and a moving video mode, and when in the static image mode, selecting an operation from a list including (1) recording the image in the static image mode, and (2) monitoring the image in the static image mode;

upon selecting the operation of recording the image in the static image mode, using the signal processing unit to generate the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

upon selecting the operation of monitoring the image in the static image mode, using the signal processing unit to generate the image signals by using pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines of the image sensing device to provide only pixel lines separated from one another by intervals of a given distance; and

upon selecting the operation of recording the image in the moving video mode, using the signal processing unit to generate the image signals by using a portion of, or the entirety of, the N number of vertically arranged pixel lines which have been mixed or culled to provide only pixel lines separated from one another by intervals of a second distance, wherein a value of the second distance is different from a value of the first distance.

11. A method for operating an electric camera of claim **10**, wherein when recording in the moving video mode, in order to correct image-instability, the signal processing unit generates the image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by a instability detector which detects an image-instability of the electric camera.

12. A method for operating an electric camera of claim **10**, wherein the value of the first distance is larger than the value of the second distance.

13. A method for operating an electric camera of claim **10**, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of the display screen.

14. A method for operating an electric camera of claim **13**, wherein the fixed parameter is equal to three.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.	: 8,339,493 B2
APPLICATION NO.	: 12/845266
DATED	: December 25, 2012
INVENTOR(S)	: T. Nakano et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column (18): Claim 10, Line 7 delete "intervals of a given distance" insert --intervals of a first distance--.

Signed and Sealed this
Fifth Day of May, 2020

Andrei Iancu
Director of the United States Patent and Trademark Office

EXHIBIT 1002

PTO/SB/05 (08-03)
Approved for use through 07/31/2009. OMB 0651-0032
U.S. Patent and Trademark Office. U.S. DEPARTMENT OF COMMERCE
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	**500.38315VC3**
First Inventor	**T. NAKANO**
Title	**ELECTRIC CAMERA**
Express Mail Label No.	

APPLICATION ELEMENTS
SEE MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: **Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450**

1. ☐ **Fee Transmittal Form** (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☐ **Applicant claims small entity status.**
See 37 CFR 1.27.
3. ☒ **Specification** [*Total Pages* 44]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608 01(a))
4. ☒ **Drawing(s)** *(35 U.S.C. 113)* [*Total Sheets* 8]
5. **Oath or Declaration** [*Total Sheets* 5]
a. . ☐ Newly executed (original or copy)
b. . ☒ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 18 completed)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) Named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)
6. ☐ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
i. . ☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, all necessary)
a. ☐ Computer Readable Form (CRF)
b. Specification Sequence Listing on:
i. . ☐ CD-ROM or CD-R (2 copies); or
ii. . ☐ Paper
c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers** (cover sheet & documents(s))
10. ☐ **37 CFR 3.73(b) Statement** ☐ **Power of Attorney**
(when there is an assignee)
11. ☐ **English Translation Document** *(if applicable)*
12. ☒ **Information Disclosure Statement** (PTO/SB/08 OR PTO-1449) ☐ Copies of Citations attached
13. ☐ **Preliminary Amendment**
14. ☐ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. ☐ **Nonpublication Request** under 35 U.S.C. 122 (b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. ☒ **Other:** Reaffirmation of Claim for Priority

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 10/660,710

Prior application information: *Examiner:* Luong Trung Nguyen *Art Unit:* 2622

19. CORRESPONDENCE ADDRESS : THE ADDRESS ASSOCIATED WITH CUSTOMER NUMBER **020457**

Signature	**/Ayal I. Sharon /**	*Date*	**JULY 28, 2010**
Name (Print/Type)	**Ayal I. Sharon**	*Registration No. (Attorney/Agent)*	55,986

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Filer:	Ayal I. Sharon/Krista Hargrove
Attorney Docket Number:	500.38315VC3

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1090**

Electronic Acknowledgement Receipt

EFS ID:	8108247
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	Ayal I. Sharon/Krista Hargrove
Filer Authorized By:	Ayal I. Sharon
Attorney Docket Number:	500.38315VC3
Receipt Date:	28-JUL-2010
Filing Date:	
Time Stamp:	15:46:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Abstract	38315vc32010ABSTRACT.pdf	27655 29d70755d1614e1b2a12554857d09b8af1878499	no	1

Warnings:	
Information:	

2	Claims	38315vc32010CLAIMS.pdf	198968 b9cd703bf3a0dd19712031b0e9fc16708e5df889	no	6
Warnings:					
Information:					
3	Oath or Declaration filed	38315vc32010DECLARATION.pdf	277372 cd811f44be0474aacb66180e3256db40b6906ed4	no	5
Warnings:					
Information:					
4	Drawings-only black and white line drawings	38315vc32010DRAWINGS.pdf	181413 2b72eafd4f405bf60ccde6524bc4c681b9d9841c	no	8
Warnings:					
Information:					
5	Transmittal Letter	38315vc32010IDS.pdf	62410 4b5faf8abf8d34af1b0a308aea839f1f6800cb7d	no	2
Warnings:					
Information:					
6	Miscellaneous Incoming Letter	38315vc32010reaffirmationclaim.pdf	26899 4955e7a17e98236dec732a8fa216de3173bb8a9c	no	1
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Filed (SB/08)	38315vc32010SB08.pdf	78816 ba1ba64c3a282cc4e4bfde51189bfafb3c832770	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
8	Specification	38315vc32010SPEC.pdf	1553667 5daa60a7367515f62d5f65eb664b2523fadaef7b	no	37
Warnings:					
Information:					
9	Transmittal of New Application	38315vc32010utility.pdf	77684 d1853f3a825430923de6143dedabb6a90f66ecc2	no	1
Warnings:					
Information:					
10	Fee Worksheet (PTO-875)	fee-info.pdf	32521 9c7f840aa822852d3b37c473b3caec14c75752e8	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	2517405

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
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New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

ABSTRACT OF THE DISCLOSURE:

An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

CLAIMS:

1. An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines, wherein N is equal to or greater than three times a number of effective scanning lines M of a display screen;

a signal processing unit, that generates image signals by using the output signals of the image sensing device; and

a display unit with a display screen, to display an image corresponding to the image signals;

wherein during monitoring in a static image mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K1 pixels;

wherein during recording in a moving video mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K2 pixels, a value of K1 being different from a value of K2; and

wherein during recording in the static image mode, the signal processing unit generates image signals by using all signal charges accumulated in the N number of vertically arranged pixel lines, to provide N pixel lines.

2. An electric camera according to the claim 1, wherein the value K1 is larger than the value K2.

3. An electric camera according to the claim 1, wherein during the moving video mode, the signal processing unit generates image signals by using the signal charges mixed or culled at pixel intervals of K2 pixels.

4. An electric camera according to the claim 3, comprising:

an image-instability detector which detects an image-instability of the electric camera;

wherein the signal processing unit generates image signals by using the part of signal charges mixed or culled at pixel intervals of K2 pixels, the part being changed according to an amount of image-instability detected by the instability detector to correct the image-instability, during a moving video mode.

5. An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines;

a signal processing unit that generates image signals by processing the output signals of the image sensing device; and

a display unit with a display screen, that displays an image corresponding

to the image signals;

wherein when recording an image in a static image mode, the signal processing unit generates image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

wherein when monitoring an image in a static image mode, the signal processing unit generates image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and

wherein when recording an image in a moving video mode, the signal processing unit generates image signals by using a portion of, or the entirety of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.

6. An electric camera according to the claim 5,

wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines.

7. An electric camera according to the claim 5, further comprising:

an image-instability detector which detects an image-instability of the electric camera; and

wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

8. An electric camera according to the claim 5, wherein a value of the first distance is larger than a value of the second distance.

9. An electric camera according to the claim 5, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of a display screen

10. An electric camera according to the claim 9, wherein the fixed parameter is equal to three.

11. A method for operating an electric camera, wherein the electric camera includes the features of

an image sensing device with a light receiving surface having an array of pixels arranged vertically and horizontally in a grid pattern with an N number of vertically arranged pixel lines,

a signal processing unit that generates image signals by processing the output signals of the image sensing device, and

a display unit with a display screen that displays an image corresponding to the image signals, the method comprising:

selecting between the static image mode and a moving video mode, and when in a static image mode, selecting an operation from a list including (1) recording an image in a static image mode, and (2) monitoring an image in the static image mode;

upon selecting the operation of recording an image in the static image mode, using the signal processing unit to generate image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

upon selecting the operation of monitoring an image in the static image mode, using the signal processing unit to generate image signals by using pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines of the image sensing device to provide only pixel lines separated from one another by intervals of a given distance; and

upon selecting the operation of recording an image in the moving video mode, using the signal processing unit to generate image signals by using a portion of, or the entirety of, the N number of vertically arranged pixel lines which have been mixed or culled to provide only pixel lines separated from one another by intervals of a second distance, wherein a value of the second distance is different from a value of the first distance.

12. A method for operating an electric camera of claim 11,

wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines.

13. A method for operating an electric camera of claim 11,

wherein when recording in the moving video mode, in order to correct image-instability, the signal processing unit generates image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by a instability detector which detects an image-instability of the electric camera.

14. A method for operating an electric camera of claim 11, wherein the value of the first distance is larger than the value of the second distance.

15. A method for operating an electric camera of claim 11, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of a display screen.

16. A method for operating an electric camera of claim 15, wherein the fixed parameter is equal to three.

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特許出願宣言書及び委任状

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As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

"ELECTRIC CAMERA"

上記発明の明細書（下記の欄で×印がついていない場合は、本書に添付）は、

The specification of which is attached hereto unless the following box is checked:

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(該当する場合) _____に訂正されました。

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as United States Application Number or
PCT International Application Number
_____ and was amended on
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I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

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I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

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I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)
外国での先行出願

(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願年月日)	Priority Not Claimed 優先権主張なし
00-006064	Japan	11/January/2000	☐
			☐

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(Application No.) (出願番号)	(Filing Date) (出願日)

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(Application No.) (出願番号)	(Filing Date) (出願日)	(Status: Patented, Pending, Abandoned) (現況：特許許可済、係属中、放棄済)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

E5037-1
(米)

PTO/SB/106(8-96) (Modulated spacing)
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Japanese Language Declaration
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委任状： 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。（弁護士、または代理人の氏名及び登録番号を明記のこと）

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

Donald R. Antonelli, Reg. No. 20,296; David T. Terry, Reg. No. 20,178; Melvin Kraus, Reg. No. 22,466; William I. Solomon, Reg. No. 28,565; Gregory E. Montone, Reg. No. 28,141; Ronald J. Shore, Reg. No. 28,577; Donald E. Stout, Reg. No. 26,422; Alan E. Schiavelli, Reg. No. 32,087; James N. Dresser, Reg. No. 22,973 and Carl I. Brundidge, Reg. No. 29,621

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私書箱	Post Office Address c/o Hitachi, Ltd., Intellectual Property Group New Marunouchi Bldg. 5-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8220, Japan

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(Supply similar information and signature for second and subsequent joint inventors.)

E5037-01
(米)

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第二共同発明者の署名　日付	Second inventor's signature　Date Ryuji Nishimura　9 Feb. 2000
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住所	Residence
国籍	Citizenship
私書箱	Post Office Address
第五共同発明者	Full name of fifth joint inventor, if any
第五共同発明者の署名　日付	Fifth inventor's signature　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address

(第六以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for sixth and subsequent joint inventors.)

第六共同発明者	Full name of sixth joint inventor, if any
第六共同発明者の署名　日付	Sixth inventor's signature　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address
第七共同発明者	Full name of seventh joint inventor, if any
第七共同発明者の署名　日付	Seventh inventor's signature　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address
第八共同発明者	Full name of eighth joint inventor, if any
第八共同発明者の署名　日付	Eighth inventor's signature　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address
第九共同発明者	Full name of ninth joint inventor, if any
第九共同発明者の署名　日付	Ninth inventor's signature　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address

(第十以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for tenth and subsequent joint inventors.)

FIG.1

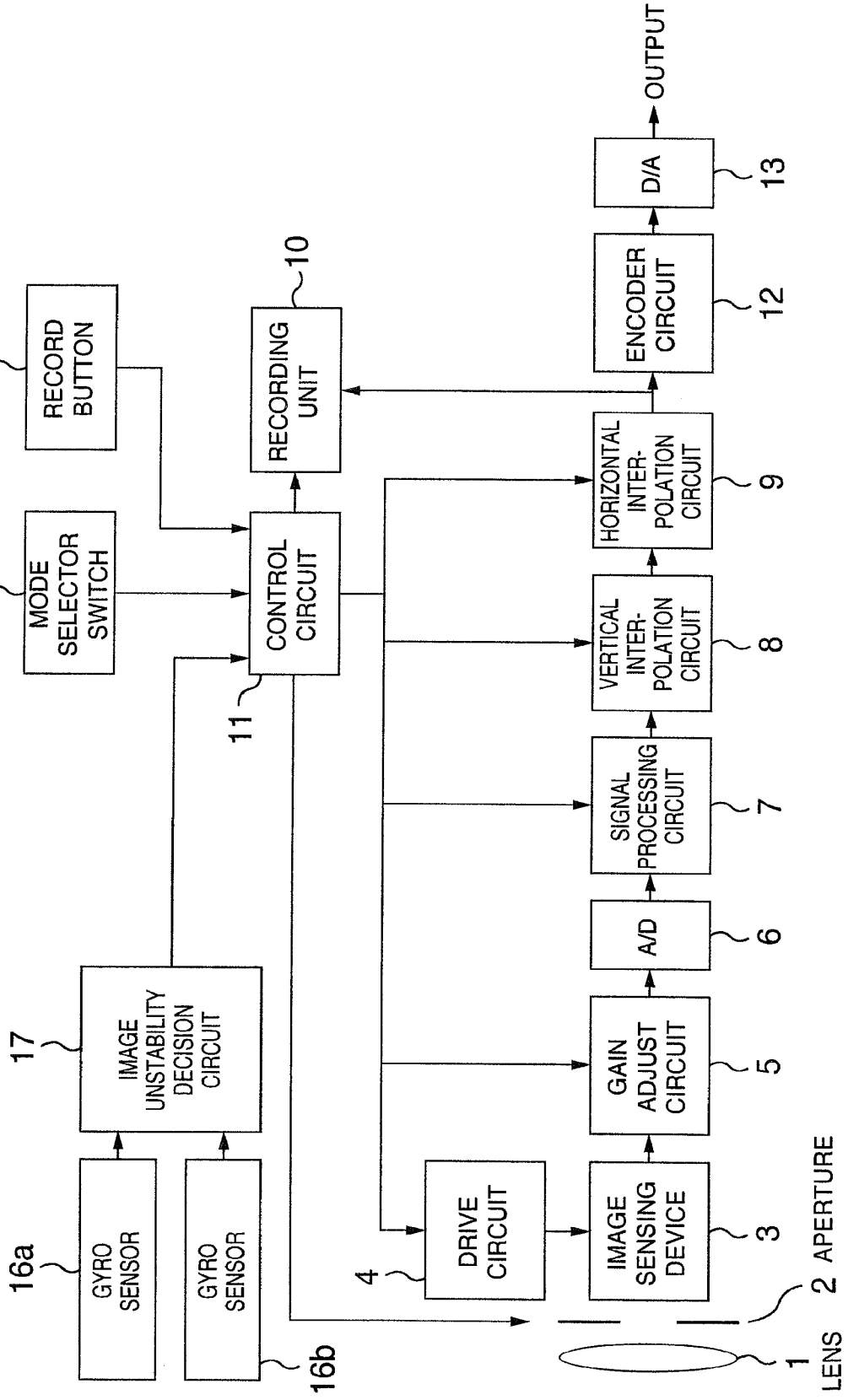

LENS
1
APERTURE
2
IMAGE SENSING DEVICE
3
DRIVE CIRCUIT
4
GAIN ADJUST CIRCUIT
5
A/D
6
SIGNAL PROCESSING CIRCUIT
7
VERTICAL INTER-POLATION CIRCUIT
8
HORIZONTAL INTER-POLATION CIRCUIT
9
RECORDING UNIT
10
CONTROL CIRCUIT
11
ENCODER CIRCUIT
12
D/A
13
OUTPUT
MODE SELECTOR SWITCH
14
RECORD BUTTON
15
GYRO SENSOR
16a
GYRO SENSOR
16b
IMAGE UNSTABILITY DECISION CIRCUIT
17

FIG.2

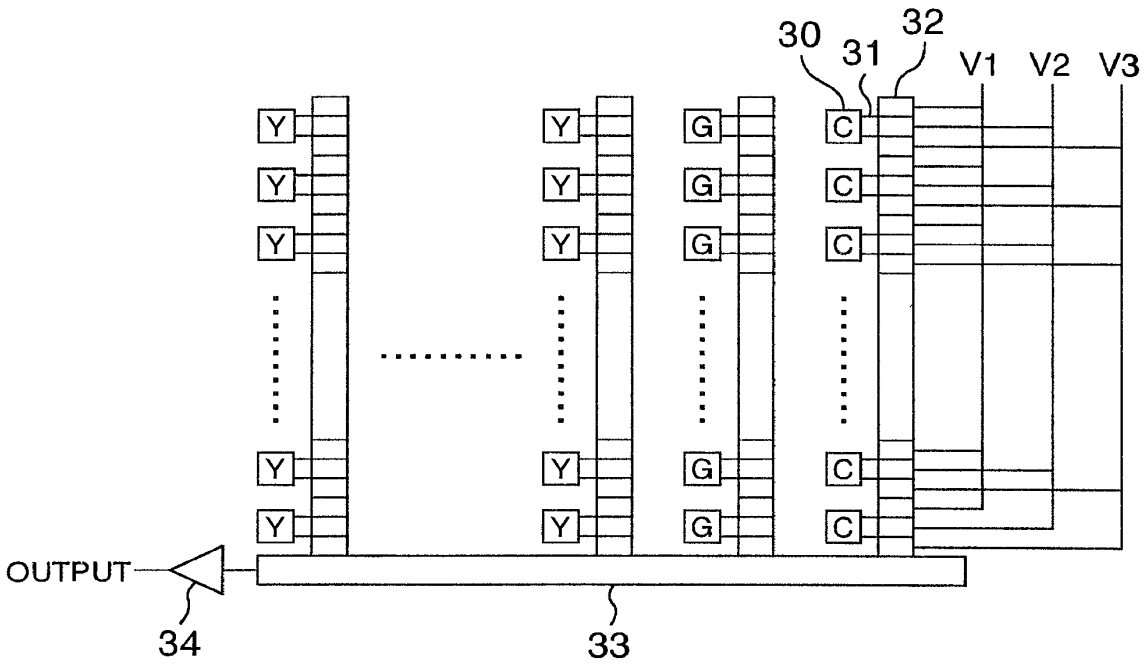

30
31
32
V1
V2
V3
Y
G
C
OUTPUT
34
33

FIG.4

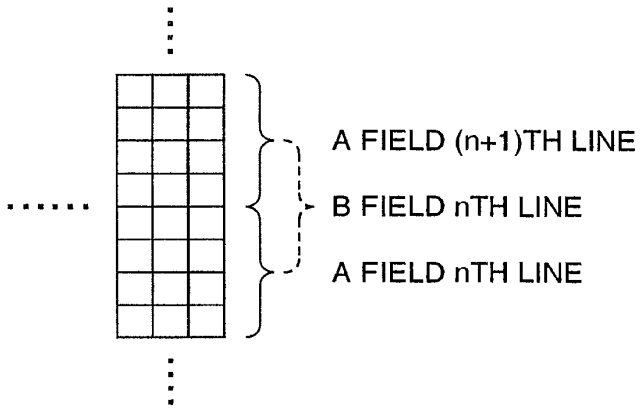

A FIELD (n+1)TH LINE
B FIELD nTH LINE
A FIELD nTH LINE

FIG.3

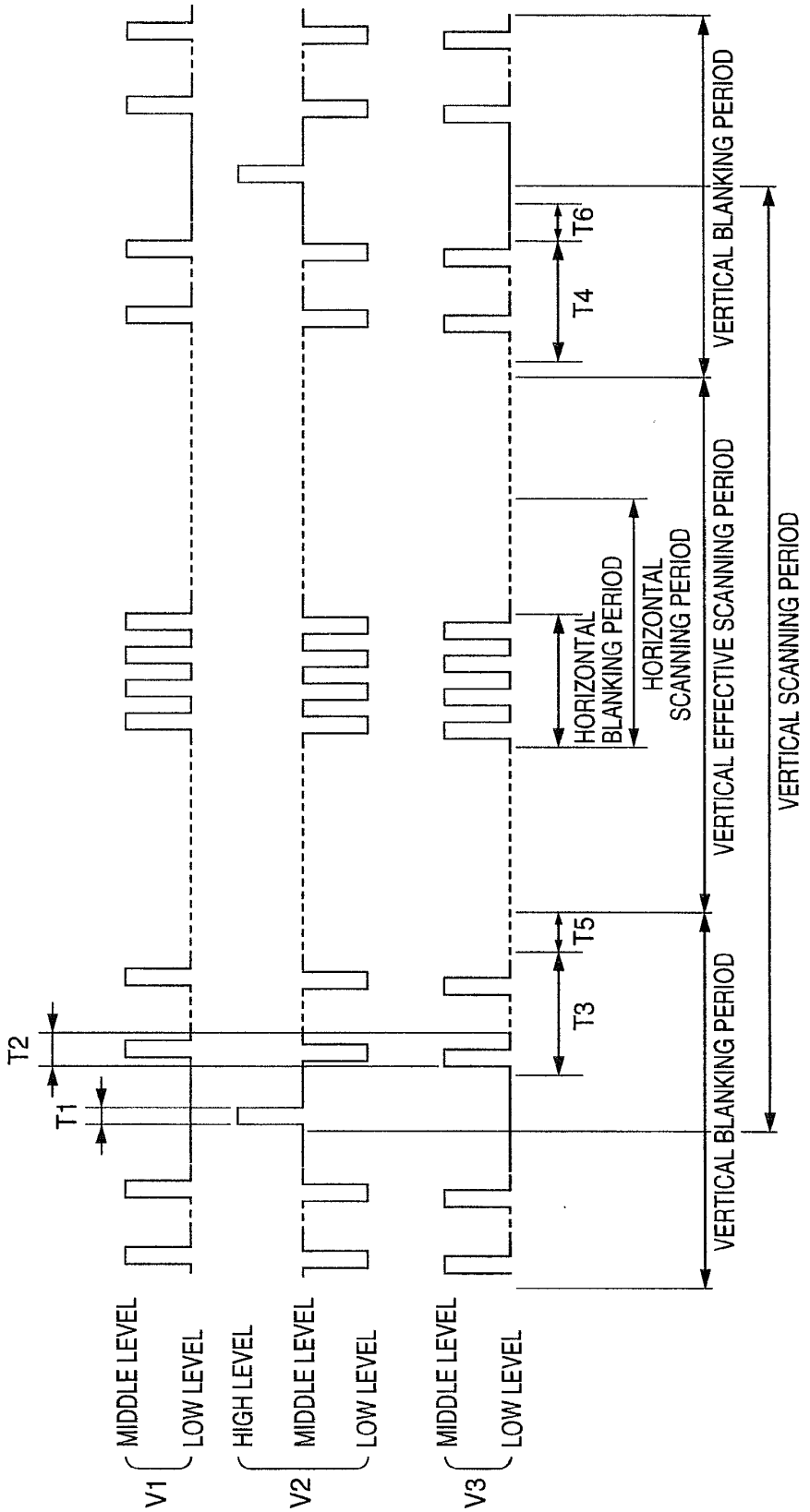

V1
MIDDLE LEVEL
LOW LEVEL
V2
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
V3
MIDDLE LEVEL
LOW LEVEL
T1
T2
T3
T4
T5
T6
HORIZONTAL BLANKING PERIOD
HORIZONTAL SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL EFFECTIVE SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL SCANNING PERIOD

FIG.5

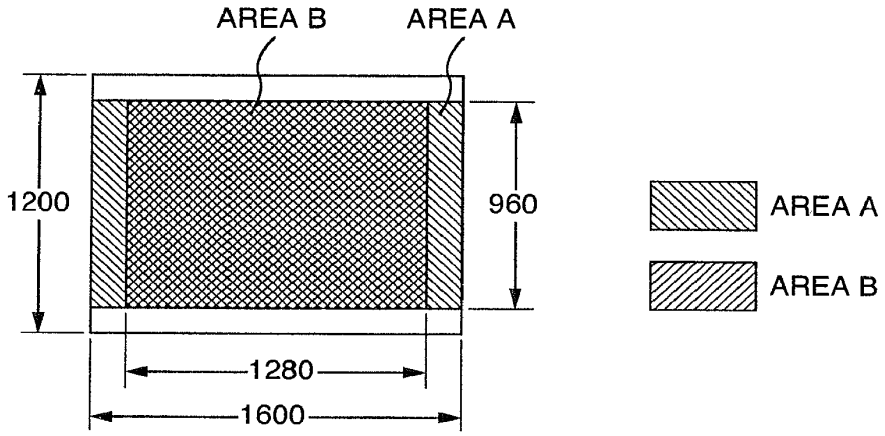

AREA B
AREA A
1200
960
1280
1600
AREA A
AREA B

FIG.6

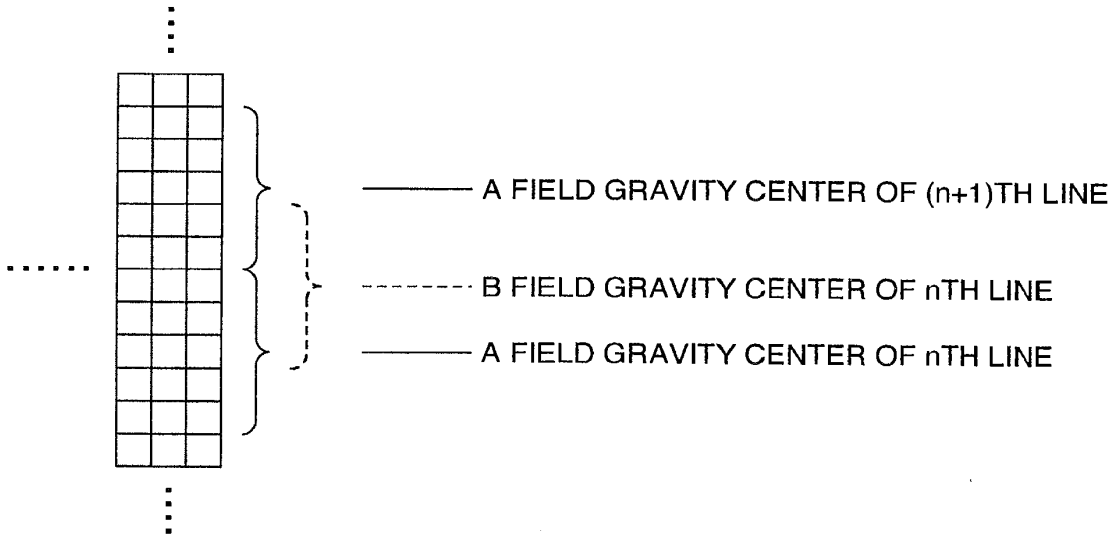

A FIELD GRAVITY CENTER OF (n+1)TH LINE
B FIELD GRAVITY CENTER OF nTH LINE
A FIELD GRAVITY CENTER OF nTH LINE

FIG.7

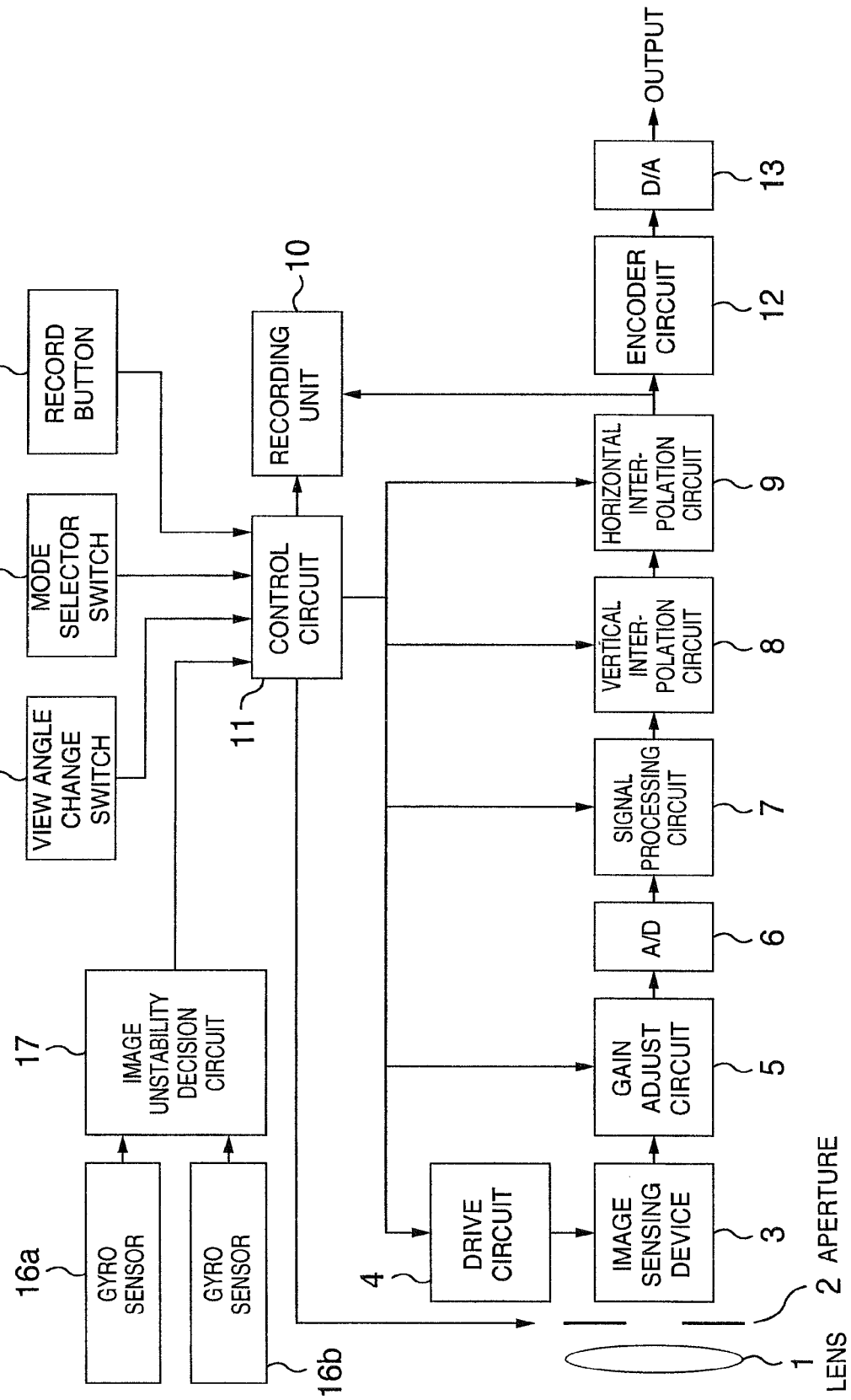

LENS
1
APERTURE
2
IMAGE SENSING DEVICE
3
DRIVE CIRCUIT
4
GAIN ADJUST CIRCUIT
5
A/D
6
SIGNAL PROCESSING CIRCUIT
7
VERTICAL INTER-POLATION CIRCUIT
8
HORIZONTAL INTER-POLATION CIRCUIT
9
RECORDING UNIT
10
CONTROL CIRCUIT
11
ENCODER CIRCUIT
12
D/A
13
OUTPUT
RECORD BUTTON
15
MODE SELECTOR SWITCH
14
VIEW ANGLE CHANGE SWITCH
18
IMAGE UNSTABILITY DECISION CIRCUIT
17
GYRO SENSOR
16a
GYRO SENSOR
16b

FIG.8

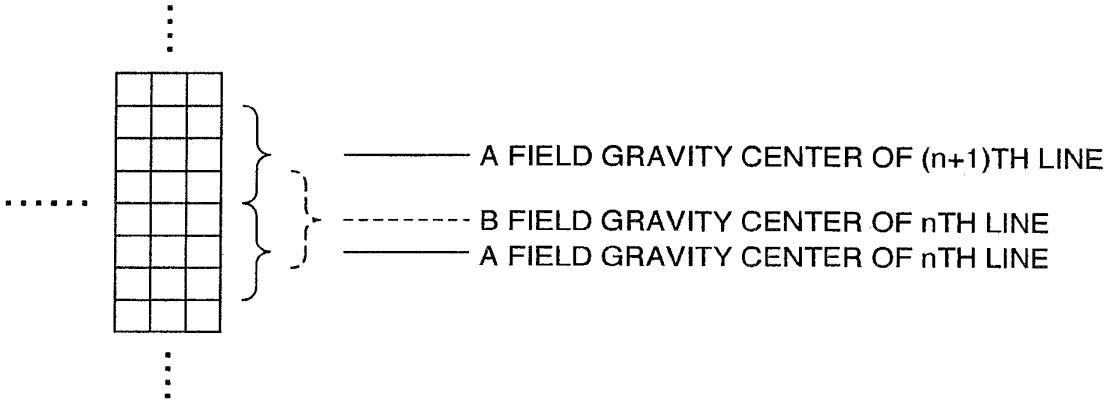

A FIELD GRAVITY CENTER OF (n+1)TH LINE
B FIELD GRAVITY CENTER OF nTH LINE
A FIELD GRAVITY CENTER OF nTH LINE

FIG.9

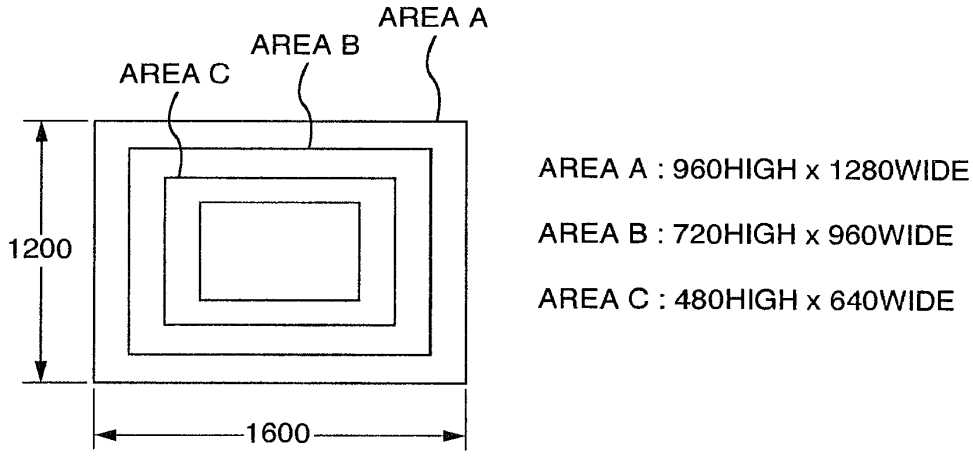

AREA A
AREA B
AREA C
1200
1600
AREA A : 960HIGH x 1280WIDE
AREA B : 720HIGH x 960WIDE
AREA C : 480HIGH x 640WIDE

FIG.10

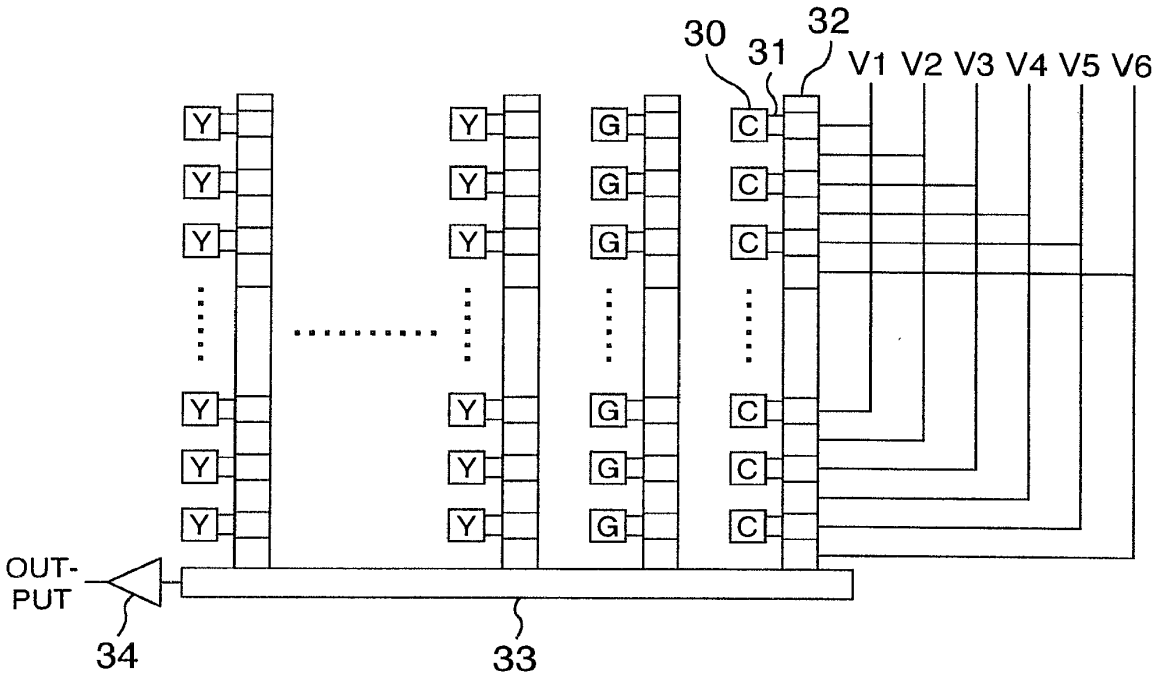


FIG.12

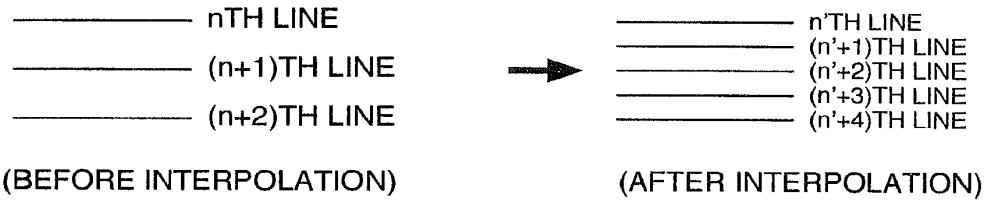


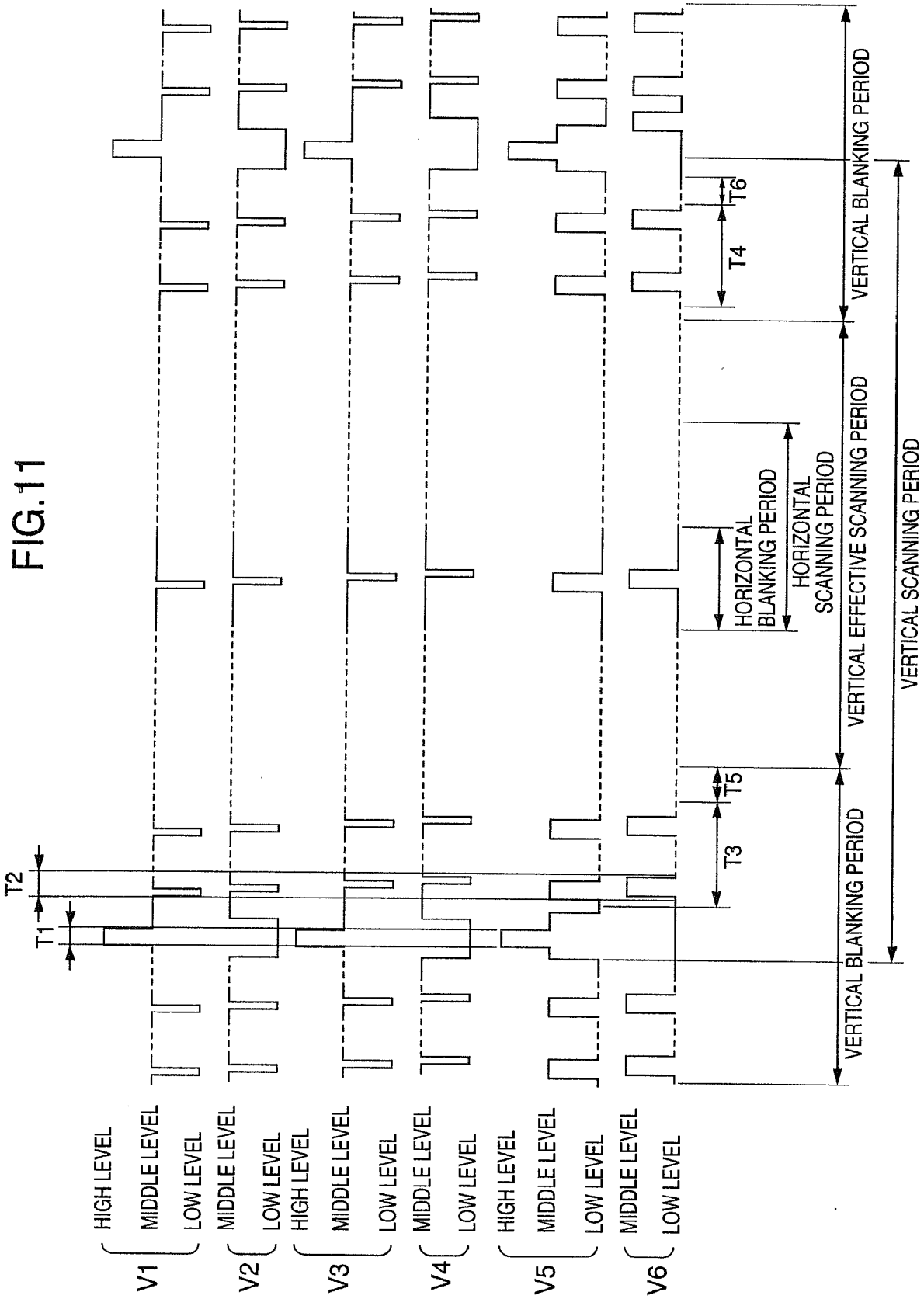
FIG.13A

Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy

FIG.13B

R	G	B
R	G	B
R	G	B
R	G	B
R	G	B

FIG.11


V1
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
V2
MIDDLE LEVEL
LOW LEVEL
V3
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
V4
MIDDLE LEVEL
LOW LEVEL
V5
HIGH LEVEL
MIDDLE LEVEL
LOW LEVEL
V6
MIDDLE LEVEL
LOW LEVEL
T1
T2
T3
T4
T5
T6
HORIZONTAL BLANKING PERIOD
HORIZONTAL SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL EFFECTIVE SCANNING PERIOD
VERTICAL BLANKING PERIOD
VERTICAL SCANNING PERIOD

500.38315VC3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: T. NAKANO, ET AL.

Application No: To be assigned

Filed: July 28, 2010

For: ELECTRIC CAMERA

Group AU: 2622 (Expected)
Examiner: Luong Trung Nguyen (Expected)

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR 1.97 AND 1.98

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

July 28, 2010

SIR:

Pursuant to Applicants' duty of disclosure, enclosed please find a List, on Form PTO/SB/08A, of documents cited in connection with a prior application of the above-identified application, that is, Application No. 10/660,710, filed September 12, 2003.

As all of the documents on the enclosed List were cited in connection with a prior application, Application No. 10/660,710, being relied upon under 35 USC 120 in the above-identified application, copies of these listed documents are not enclosed. See 37 CFR 1.98(d).

This Information Disclosure Statement is being submitted concurrently with the filing of the above-identified application. Clearly, requirements of 37 CFR 1.97(b) are satisfied.

To the extent that the documents on the enclosed List are not in English, it is respectfully submitted that requirements of 37 CFR 1.98(a)(3) are satisfied by English-language abstracts submitted with the respective non-English language

documents, and/or by Search Reports/Official Actions in English or with English translations thereof.

In view of all the foregoing, it is respectfully submitted that all applicable requirements of 37 CFR 1.97 and 1.98 have been satisfied, in connection with all of the documents on the enclosed List. Accordingly, consideration of the listed documents, upon examination of the above-identified application, is respectfully requested.

Kindly charge any shortage in fees due in connection with the filing of this paper to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (case 500.38315VC3), and credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By **/Ayal I. Sharon /**
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Registration No. 55,986

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500.38315VC3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): T. NAKANO, et al

Serial No.: To be assigned

Filed: July 28, 2010

For: ELECTRIC CAMERA

Expected Group: 2622

Expected Examiner: Luong Trung Nguyen

REAFFIRMATION OF CLAIM FOR PRIORITY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

July 28, 2010

Sir:

Under the provisions of 35 USC §119 and 37 CFR §1.55, Applicants hereby claim the right of priority based on Japanese Patent Application No. 2000-006064, filed in Japan on January 11, 2000.

The certified copy of the above-referred to Japanese Patent Application was filed on April 10, 2000 in prior application 09/520,836, filed March 8, 2000.

Respectfully submitted,

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	**To be assigned**
Filing Date	**July 28, 2010**
First Named Inventor	**T. NAKANO, et al.**
Art Unit (expected)	**2622**
Examiner Name (expected)	**Luong Trung Nguyen**
Attorney Docket Number	**500.38315VC3**

U.S. PATENT DOCUMENTS

Examiner Initials'	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 6,661,451		12-2003	Kijima, et al.	
		US- 7,154,539		12-2006	Nishimura, et al.	
		US- 5.828,406		10-1998	Parulski et al.	
		US- 4,054,915		10-1977	Sugihara, Yasumasa	
		US- 5,170,249		12-1992	Ohtsubo, et al.	
		US- 5,187,569		02-1993	Tani, Nobuhiro	
		US- 7,403,226		07-2008	Nakano, et al.	
		US-6,195,125		02-2001	Udagawa et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials'	Cite No.[1]	Foreign Patent Document Country Code[3]–Number[4]–Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		JP 9-270959	10-97			
		JP 11-187306	07-99			
		JP 04-323973	11/13/1992	Hitachi, Ltd.		
		JP 11-004456	01/06/1999	Fuji Photo Film Co., Ltd.		
		JP 11-355665	12/24/1999	Fuji Photo Film Co., Ltd.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

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ELECTRIC CAMERA

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. application serial no. 10/660,710, and is related to U.S. application serial no. 10/660,711, filed September 12, 2003, now U.S. Patent No. 7,403,226, issued July 22, 2008, both of which are divisional applications of U.S. application Serial No. 09/520,836, filed March 8, 2000, now U.S. Patent No. 6,765,616, issued July 20, 2004, the subject matter of which is incorporated by reference herein.

BACKGROUND OF THE INVENTION

The present invention relates to a photography related to video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

Electric cameras using solid-state image sensors such as CCDs (charge-coupled devices) include a so-called video camera or camcorder for taking moving images and a so-called digital still camera for taking still images. In recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.

In a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL. Therefore, the effective number of vertically arranged pixels or picture elements on the image sensing device used in such a camera is determined to enable television signals to be generated. The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines (the number of scanning lines actually

displayed on the monitor which is equal to the number of scanning lines in the vertical blanking period subtracted from the total number of scanning lines in each field). To realize this, the image sensing device has about 480 pixel rows as the standard effective number of vertically arranged pixels. That is, the signals of two vertically adjoining pixels in each field are mixed together inside or outside the image sensing device to generate about 240 scanning lines, and the combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

Some image sensing devices to take moving images according to the NTSC system have an area of pixels for image stabilization added to the area of effective pixel area, thus bringing the effective number of vertically arranged pixels to about 480 or more. In this case, an area beyond 480th pixels is read out at high speed during the vertical blanking period and therefore the signals thus read out are not used as effective signals. Therefore, the video signals can only be generated from those signals coming from the area of about 480 vertically arranged pixels. When such a camera is used to photograph a still image, it is relatively easy to generate a static image signal conforming to, for example, JPEG (Joint Photographic Expert Group) from the signals coming from the same pixel area that is used to take a moving image. A problem remains, however, that the number of vertically arranged pixels obtained is limited to around 480, making it

impossible to produce more detailed static image signals.

In a camera having an image sensing device with the area of pixels for image stabilization mentioned above, a method of alleviating this problem may involve using the entire area of effective pixels including the area of image stabilization pixels in photographing a still image. Even when photographing a still image, however, the photographed image needs to be monitored for check and, for that purpose, it is necessary to generate signals conforming to the television system from signals read out from all effective pixels.

An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.

This conventional camera, however, requires a large processing circuit, such as field memory, for signal conversion. Another drawback is that the image sensing device readout cycle is a plurality of times the field cycle, degrading the dynamic resolution. Even with the use of this circuit, the number of pixels obtained as the static image signals is limited to the number of effective pixels used for moving videos plus the area of image stabilization pixels.

In a digital still camera designed for taking still images, there has been a trend in recent years toward an increasing number of pixels used on the moving video image sensing device in order to obtain higher resolution static image signals. When taking a moving image or monitoring the video, it is necessary to generate signals that conform to the television system. The number of pixels on such an image sensing device, however, does not necessarily match the number of scanning lines of the television system and therefore some form of conversion means is required.

The conversion means may involve, as in the video camera with the area of image stabilization pixels, reading out signals from the image sensing device taking a longer time than the field cycle and interpolating them to generate television signals. This method has, in addition to the problem described above, a drawback that the readout cycle increases as the number of pixels increases, further degrading the dynamic resolution.

To mitigate this problem, JP-A-9-270959 discloses an apparatus which mixes together or culls the pixel signals inside the image sensing device to reduce the number of signals to be read and therefore the read cycle. Although this apparatus alleviates the problem of the degraded dynamic resolution, it requires a large processing circuit such as field memory to perform time-axis transformation to generate signals conforming to the television system and the image sensing device itself needs to have a

special structure for performing desired mixing and culling.

SUMMARY OF THE INVENTION

The present invention relates to a photography of video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels.

The conventional electric cameras, as described above, have drawbacks that when taking a still picture by using a video camera, the number of pixels is not sufficient and that when taking a moving image with a still camera, the associated circuit inevitably increases and the dynamic image quality deteriorates. Taking both moving and static images of satisfactory quality with a single camera is difficult to achieve. In addition to solving the above problems, to obtain good dynamic picture quality by using an image sensing device having a large number of pixels intended for still images requires extracting a pixel area that is used to realize an image stabilizing function. The conventional art and cameras do not offer a means to accomplish this function.

An object of the present invention is to provide an electric camera that solves these problems and which uses an image sensing device with a sufficient number of pixels for still images and enables taking of highly detailed still images and a moving video taking with

reduced image quality degradation without increasing circuitry such as field memory. It is also an object of the present invention to provide an electric camera that can also realize the image stabilizing function.

According to one aspect of this invention, the electric camera to realize the above objectives has: an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system; a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of every K pixels to produce a number of lines of output signals which corresponds to the number of effective scanning lines M, K being at least one of integers equal to or less than an integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device); and a signal processing unit to generate image signals by using the output signals of the image sensing device.

As explained above, since this invention eliminates the limit on the number of vertically arranged pixels, an electric camera can be provided which enables taking of highly detailed still images and a satisfactory moving video taking by using an image sensing device with a large enough pixel number even for still images.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram showing the configu

ration of a first embodiment of an electric camera according to the present invention.

Figure 2 is a schematic diagram showing the structure of an image sensing device in the first embodiment of the electric camera of the invention.

Figure 3 is a drive pulse timing diagram in the first embodiment of the electric camera of the invention.

Figure 4 is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

Figure 5 is a schematic diagram showing a readout area in the first embodiment of the electric camera of the invention.

Figure 6 is a schematic diagram showing a mixing operation in the first embodiment of the electric camera of the invention.

Figure 7 is a block diagram showing the configuration of a second embodiment of an electric camera according to the present invention.

Figure 8 is a schematic diagram showing a mixing operation in the second embodiment of the electric camera of the invention.

Figure 9 is a schematic diagram showing a readout area in the second embodiment of the electric camera of the invention.

Figure 10 is a schematic diagram showing the structure of an image sensing device in a third embodiment of the electric camera according to the present invention.

Figure 11 is a drive pulse timing diagram in the third embodiment of the electric camera of the invention.

Figure 12 is a schematic diagram showing an interpolation operation in the third embodiment of the electric camera of the invention.

Figures 13A and 13B are schematic diagrams showing the arrangement of color filters in the image sensing device in a fourth embodiment of the electric camera according to the present invention.

DESCRIPTION OF THE EMBODIMENTS

Now embodiments of the present invention will be described by referring to the accompanying drawings. Figure 1 is a block diagram showing the configuration of one embodiment of an electric camera according to the invention.

In Figure 1, reference number 1 represents a lens, 2 an aperture, 3 an image sensing device, 4 a drive circuit, 5 a gain adjust circuit, 6 an analog-digital (A/D) conversion circuit, 7 a signal processing circuit, 8 a vertical interpolation circuit to perform interpolation in a vertical direction, 9 a horizontal interpolation circuit to perform interpolation in a horizontal direction, 10 a recording unit including recording media such as magnetic tape, semiconductor memory and optical disk to record a video signal, 11 a control circuit to control these constitutional elements according to the operating state, 12 an encoder circuit to modulate the video signal into a

standard television signal, 13 a digital-analog (D/A) conversion circuit, 14 a mode selector switch to change over the operation mode between the moving video taking and the still image taking, 15 a record button to start or stop the recording, 16a and 16b gyro sensors to detect vertical image-unstability and lateral image-unstability, respectively, and 17 an image-unstability decision circuit to determine the image-instability from signals output from the gyro sensors.

In the above configuration, light coming from the lens 1 through the aperture 2 is focused on a light receiving surface of the image sensing device 3 where it is converted into an electric signal. In this embodiment the image sensing device 3 is of a CCD type. Figure 2 shows the structure of this image sensing device 3. In Figure 2, denoted 30 are pixels each formed of a photodiode, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in such a way that the combination of these three colors is repeated horizontally every three pixels and that the filters of the same colors are lined vertically in so-called vertical stripes. Although an arbitrary number of pixels may be used, this embodiment has an array of 1200 pixels vertically and 1600 pixels horizontally. A vertical transfer unit 32 is a CCD which is driven by three phase pulses V1, V2, V3. This CCD has a three-gate structure in which each pixel corresponds to

three phase pulses and thus can vertically transfer a signal charge of each pixel independently. Transfer gates 31 for transferring the charge of each pixel to the vertical transfer unit 32 are commonly connected to a gate of the vertical transfer unit 32 that corresponds to the V2 pulse. An operation to transfer the charge from each pixel to the vertical transfer unit 32 in response to a peak value of the pulse applied to the commonly connected gate and an operation to transfer the charge vertically are performed separately. A horizontal transfer unit 33 horizontally transfers the charges supplied from the vertical transfer units 32 and outputs them successively through an output amplifier 34 from the output terminal.

Referring back to Figure 1, the operation performed when the moving video mode is selected by the mode selector switch 14 will be explained. The number of vertically arranged pixels on the image sensing device in this embodiment is 1200, so if the number of effective scanning lines in the field of the NTSC system is assumed to be 240 lines, then vertically mixing five pixels (= 1200 pixel rows/240 scanning lines) can match the number of lines of output signals from the image sensing device to the number of effective scanning lines.

However, in this embodiment, to realize the image stabilizing function described later, four vertically arranged pixels are mixed together during motion image taking mode. When four vertically arranged pixels are to be cyclically mixed together, the signals from the area of

960 pixels (= 240 scanning lines × 4 pixels) out of the 1200 vertically arranged pixels are used as effective signals and the remaining 240 pixels (= 1200 (all pixels) - 960 (effective pixels)) are not used for image forming. Figure 3 shows the timing of a vertical drive pulse for the image sensing device in this operation mode, with V1, V2 and V3 representing three phase drive pulses applied to each gate of the CCD or vertical transfer unit 32.

In Figure 3, in a period T1 included in the vertical blanking period, the drive pulse V2 is held high to transfer the signal charge accumulated in each pixel to under the V2 gate of the vertical CCD. Next, in a period T2, while the V2 pulse is still at middle level, the V3 pulse is raised from low level to middle level; next, while the V3 pulse is at middle level, the V2 pulse is changed from middle level to low level, after which the V1 pulse is changed from low level to middle level; next, while the V1 pulse is at middle level, the V3 pulse is changed from middle level to low level, after which the V2 pulse is changed to middle level and finally the V1 pulse is changed from middle level to low level. With this sequence of pulse operations, the signal charges under the V2 gate for one pixel row are transferred and held again under the V2 gate.

By repeating this series of operations, the signal charges for a desired number of pixel rows can be transferred. In Figure 3, during a period T3 included in the vertical blanking period before the vertical effective

scanning period (the vertical scanning period minus the vertical blanking period which corresponds to the actually displayed image) and during a period T4 included in the vertical blanking period after the vertical effective scanning period, the above transfer operation for one pixel row is repeated a total of 240 times to transfer the signal charges of the 240 pixel rows not used for image generation to the horizontal transfer unit 33 during the vertical blanking period. For example, if this transfer operation is performed 120 times during the period T3 and 120 times during the period T4, the signal charges from upper 120 pixel rows and lower 120 pixel rows on the light receiving surface are transferred to the horizontal transfer unit 33 during the period T3 and period T4 within the vertical blanking period. During each of the subsequent periods T5 and T6 in the vertical blanking period, the horizontal transfer unit 33 is driven for a predetermined period to output the charges transferred to the horizontal transfer unit 33 from the output terminal. These charges are not used as valid signals as they are output during the vertical blanking period.

Next, in the vertical effective scanning period of Figure 3, the above one-pixel-row transfer operation is performed four times during each horizontal blanking period to transfer the signal charges of four pixel rows to the horizontal transfer unit 33 where they are mixed together. Then, during a horizontal effective scanning period (the horizontal scanning period minus the horizontal blanking

period which corresponds to the actually displayed image), the horizontal transfer unit 33 is driven to read out the signal charges from the horizontal transfer unit to produce an output signal conforming to the television system. If the above operation is performed on the A field and if, on the B field, the number of pixel rows transferred during the period T3 is set to 122 rows and that during the period T4 is set to 118 rows, then the combination of four pixel rows to be cyclically mixed together shifts by two rows between the two fields, thus allowing the interlaced scanning to be performed as shown in Figure 4. (Figure 4 shows the light receiving surface of the image sensing device and its relation to the displayed screen is vertically inverted.)

Let us return to Figure 1. The output signal from the image sensing device 3 is adjusted in gain by the gain adjust circuit 5 and then converted by the A/D conversion circuit 6 into a digital signal. The digital signal is then processed by the signal processing circuit 7 that performs color signal processing and luminance signal processing, such as generation of color signals, gamma correction, white balance processing and outline enhancement. The image sensing device in this embodiment has an array of vertical stripes of yellow (Ye), green (G) and cyan (Cy) color filters, so the color signals for Ye, G and Cy are obtained as a series of color points from one line of output signals at all times no matter how many pixels are vertically combined. From these color signals three

primary color signals R, G, B can be obtained from the following calculations.

$$R = Ye - G$$

$$B = Cy - G$$

$$G = G$$

The R, G and B signals undergoes the white balance processing and gamma correction processing in the signal processing circuit 7 and are then converted into color difference signals such as R-Y, B-Y or U and V. The luminance signals and the color difference signals are then entered through the vertical interpolation circuit 8 into the horizontal interpolation circuit 9. In this operation state the signals just pass through the vertical interpolation circuit 8 without being processed. The horizontal interpolation circuit 9 performs interpolation on the signals in the horizontal direction.

Figure 5 shows the light receiving surface of the image sensing device. As described above, in the operating state of this embodiment, the signals read out during the vertical effective scanning period correspond to an area having 960 of the 1200 vertically arranged pixels and a horizontal width of 1600 pixels, as shown shaded at A in Figure 5. If the entire light receiving surface of the image sensing device has a 4-to-3 (width to height) aspect ratio, the shaded area A is more laterally elongate than this aspect ratio. Hence, if the signals of all horizontal pixels of the light receiving surface are displayed, for example, on an NTSC standard television monitor with the

4-to-3 aspect ratio, the image displayed is compressed horizontally and looks vertically elongate, compared with the original image. It is therefore necessary to output during the horizontal effective scanning period only those signals coming from a pixel area with the horizontal width conforming to the aspect ratio of the television system, as shown by a shaded area B. When the television system has an 4-to-3 aspect ratio, the number of pixels in the horizontal width of the shaded area B is 1280 (= 960 (vertical effective pixels) × 4/3).

Returning back to Figure 1, the horizontal interpolation circuit 9 performs interpolation processing on the signals from the horizontal 1280 pixels to expand the signals so that they can be output over the entire horizontal effective scanning period. It also performs switching among different clocks as required. With the above operation, an area having 960 pixels in height and 1280 pixels in width is demarcated from the light receiving surface as signals conforming to the television system. Then, the luminance signal and the color difference signal are encoded by the encoder circuit 12 into television signals, which are then converted by the D/A conversion circuit 13 into analog signals for output. When the recording is specified by the record button 15, the signals are recorded by the recording unit 10. At this time, the signals may be compressed in the MPEG (Moving Picture Expert Group) format.

Next, the image stabilizing operation will be

explained. Image-unstability information obtained by the gyro sensors 16a, 16b that detect vertical and horizontal image-unstabilities is entered into the image-unstability decision circuit 17, which checks the received information for the amount and direction of the image-unstability and converts them into the number of pixels in vertical and horizontal directions on the light receiving surface of the image sensing device. Based on the converted pixel numbers, the position of an extracted area (effective pixel area) on the light receiving surface is shifted in a direction that cancels the image-unstability. This can correct the image-unstability. The positional shifting of the extracted area is performed as follows. The shifting in the vertical direction can be made by changing the number of pixel rows transferred during the periods T3 and T4 in Figure 3 and the shifting in the horizontal direction made by changing the interpolation start position in the horizontal interpolation circuit 9.

The operation during the moving video mode has been described above. Next, the operation performed when the static image mode is selected by the mode selector switch 14 will be explained.

In the static image mode, too, until the recording is requested by the record button 15, the camera outputs signals compatible with the television system to monitor the angle of view. Unlike the moving video photographing, all of the effective pixels on the image sensing device are used in this embodiment during the still image

photographing to produce signals with as high a resolution as possible. Hence, during the monitoring the television signals need to be generated from the signals coming from the entire pixel area.

The image sensing device of this embodiment has 1200 vertically arranged pixels, and the number of lines of output signals from the image sensing device can be made to match the number of effective scanning lines of NTSC system, which is assumed to have 240 scanning lines, by vertically mixing five pixels (= 1200/240). To make the image sensing device operate in this manner, the one-pixel-row transfer operation is performed five times during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of Figure 3. With this operation, the signal charges of five pixel rows can be mixed by the horizontal transfer unit 33. As for the transfer operations during the periods T3 and T4 in the vertical blanking period, because the interlaced scanning is carried out, only two pixel rows are transferred during the period T3 on the B field, with no transfer operations performed in other vertical blanking periods (In this embodiment, 1200/240 = 5 with no remainder produced, so no further transfer is necessary; if, however, a remainder occurs, the remaining pixels need only be transferred during the periods T3 and T4).

The charges mixed by the horizontal transfer unit 33 are read out by driving the horizontal transfer unit 33 during the horizontal effective scanning period. With the

above operations, the signal charges of all pixels on the image sensing device can be read out in a manner conforming to the television system. The output signal from the image sensing device 3 is, as during the moving image photographing, adjusted in gain by the gain adjust circuit 5 and converted by the A/D conversion circuit 6 into a digital signal, which is then subjected to the color signal processing and the luminance signal processing in the signal processing circuit 7 before being entered into the vertical interpolation circuit 8. During the static image monitoring, the vertical interpolation circuit 8 performs a vertical gravity center correction on the received signals.

Figure 6 shows combinations of pixels to be cyclically mixed on the A field and the B field and also the vertical position of the gravity center of the mixed signals. In the interlaced scanning, scanning lines of the A field and the B field are located at the centers of adjoining scanning lines on other field. Hence, the signal samplings in the camera system for the two fields must be 180 degrees out of phase in the vertical direction. In the operating state of this embodiment, however, because five pixels are mixed together, the gravity centers of the output signals for the A field and the B field are deviated 36 degrees (= 1/2 pixel or 1/10 the line-to-line distance on the same field) from the ideal sampling phase difference of 180 degrees, as shown in Figure 6. To correct this requires generating a signal from two adjoining output lines by interpolation. For example, if we let an nth

output line on a field be Sn and an (n+1)th output line on the same field be Sn+1, then a signal Sn' obtained by calculating Sn'=(Sn × 9/10) + (Sn+1 × 1/10) is one whose gravity center is shifted by 1/10 output line from the gravity center of the nth output line toward the (n+1)th output line. The above calculation can also be performed on the signals for the B field to correct the gravity center deviation of sampling. In this embodiment, however, to equalize the effects of interpolation of the A field and the B field, the following calculations are performed to correct the nth output line by 1/20 line toward the (n-1) line on the A field and by 1/20 line toward the (n+1)th line on the B field.

A field: $Sn' = (Sn \times 19/20) + (Sn-1 \times 1/20)$

B field: $Sn' = (Sn \times 19/20) + (Sn+1 \times 1/20)$

While this embodiment performs the interpolation based on the calculation of two adjoining lines of output signals, a greater number of lines may be used for the interpolation processing. The output signal of the vertical interpolation circuit 8 is supplied to the horizontal interpolation circuit 9, which in this operating state does nothing but passes the signal. Then, as in the case of the moving image photographing, the signal is encoded by the encoder circuit 12 into a television signal, which is then converted by the D/A conversion circuit 13 into an analog signal for output. As described above, the television signals can be generated from all of the pixel area of the image sensing device also during the static

image mode.

Next, the operation performed when the recording is requested by the record button 15 will be described. During the monitoring in the static mode, the signals are mixed together inside the image sensing device to reduce the number of signals and thereby generate television signals. During recording, however, the mixing processing is not performed and all the pixel signals need to be read out independently of each other in order to produce high resolution signals. To realize this, the one-pixel-row transfer operation is performed only once during each horizontal blanking period in the vertical effective scanning period shown in the pulse timing diagram of Figure 3. This causes only the signal charges for one pixel row to be transferred into the horizontal transfer unit 33, which is then driven to read out the signal charges for one pixel row. Repeating this operation the number of times equal to the number of vertically arranged pixel rows enables the signal charges of all pixel rows to be read out independently of each other. The transfer operation is not done during the periods T3 and T4 in the vertical blanking period.

The signal charges thus read out are adjusted in gain by the gain adjust circuit 5 and converted by the A/D conversion circuit 6 into digital signals, which are then subjected to the color signal processing and the luminance signal processing in the signal processing circuit 7, after which the signals are supplied through the vertical inter-

polation circuit 8 and the horizontal interpolation circuit 9 to the recording unit 10 where they are recorded. At this time, no interpolation processing is performed by the vertical interpolation circuit 8 or horizontal interpolation circuit 9. The recording unit 10 may compress the signals in the JPEG (Joint Photographic Expert Group) format, for example. Because during the static image recording, no television signal can be generated, an image immediately before starting the recording or a single color image is output as the television signal for monitoring purpose. With the above operation, high resolution signals obtained from all the pixels of the image sensing device can be recorded. Although in this embodiment the recording unit is used commonly for the moving video mode and for the static image mode, dedicated recording units may be provided separately for these modes.

As explained above, since there is no limit on the number of vertically arranged pixels in this embodiment, an image sensing device with a large enough pixel number even for still images can be used to photograph highly detailed still images and satisfactory moving images.

Further, the signal mixing and the vertical signal transfer during the vertical blanking period allow the signals from the image sensing device with a large number of pixels to be read out in a manner that conforms to the television system. This in turn can reduce image quality degradation and realize the moving image photo-

graphing with an image stabilizing function and the monitoring during still image photographing.

Only the output signals from that horizontal segment which virtually corresponds to the television system's aspect ratio with respect to the vertical segment are extracted and output over the entire horizontal effective scanning period of the television system. This ensures that the output signals obtained conform to the television system's aspect ratio regardless of the extracted vertical segment position.

Further, the image sensing device is driven in such a way as to shift the position of the pixels to be cyclically mixed together every display cycle of the television system in order to output interlaced signals. With this arrangement, the interlaced scanning can be performed even when an image sensing device with a large number of pixels is used.

Further, the output signals produced by the mixing are interpolated so that the gravity centers of the output signals interlaced every display cycle have a phase difference of 180 degrees in the vertical direction. This ensures that the interlaced output signals have no deviation from the ideal 180-degree phase difference during interlacing even when an interlace phase deviation would normally occur, as when odd numbered pixels are mixed together.

In this embodiment, the image sensing device has 1200 vertically arranged pixels, and four pixels are mixed

together during the moving video mode and five pixels during the static image mode. Because the area of image-stabilization pixels may or may not be used and set to any desire size, the number of pixels to be cyclically mixed together in each mode needs only to be equal to or less than the integral part of a quotient of the number of vertically arranged pixels divided by the number of television system's effective scanning lines (in the above example, 5 or less). (The number of vertically arranged pixels does not need to be divisible and, in the above example, may be more than 1200).

The number of vertically arranged pixels for static image photographing needs only to be three or more times the number of effective scanning lines on each field of the television system. In this embodiment the vertically adjoining pixels are mixed together to reduce the number of output lines from the image sensing device during the vertical effective scanning period. The number of lines of output signals can also be reduced by a so-called culling operation, by which only one line of signal charges of pixels is read out for every predetermined number of lines.

While in this embodiment the vertical transfer unit of the image sensing device is formed as a CCD that is driven by three phase pulses for each pixel, the image sensing device may have any desired structure as long as it can realize the mixing or culling of pixels that meets the above conditions.

Although this embodiment described the case of NTSC system, the invention can also be applied to other television systems, such as PAL standard, with different numbers of effective scanning lines.

In summary, a variety of constructions essentially equal in the working principle to this embodiment can be realized by the use of an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field of the television system and which allows the vertical mixing or culling of that number of pixels which is at least one of integers equal to or less than the integral part of a quotient of N divided by M (a number of lines of output signals corresponds to 1/K the number of vertically arranged pixels N of the image sensing device).

Next, another embodiment of the present invention will be described by referring to Figure 7 showing the configuration of the embodiment. The configuration shown in Figure 7 differs from that of Figure 1 in that it has a view angle change switch 18. In Figure 7 constitutional elements identical with those shown in Figure 1 are assigned like reference numbers and explanations on the constitutional elements performing the same operations as those in Figure 1 are omitted here.

The operations of the moving video mode, the monitoring during the static image mode and the static image recording are similar in normal condition to the operations of the previous embodiment which was explained with reference to the configuration diagram of Figure 1. An operation performed when during the moving video mode a

request to change the angle of view is made by the view angle change switch 18 will be described.

In the normal condition of this embodiment, as explained in the previous embodiment, the mixing of four vertically arranged pixels, the vertical transfer during the vertical blanking period and the horizontal interpolation processing are performed to extract an area of 960 pixels in height and 1280 pixels in width from the entire pixel area to generate television signals. When a view angle change (which means a zooming function without image quality degradations in the vertical direction) is requested by the view angle change switch 18, three vertically arranged pixels are mixed together and the signals from the excess vertically arranged pixels are read out during the vertical blanking periods before and after the vertical effective scanning period.

In this embodiment, signals of 480 pixels (= 1200 - 240×3) or 160 lines of output signals after mixing (= 480/3) need to be read out during the vertical blanking period. This allows the signals of 720 vertically arranged pixels to be read out as 240 lines of output signals conforming to the television system. To carry out this reading requires, in the pulse timing diagram of Figure 3, transferring the signals of three pixel rows during each horizontal blanking period in the vertical effective scanning period and also transferring a total of 480 pixel rows (= 160 lines of output signals) during the T3 and T4 periods in the vertical blanking period. The combinations

of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

The output signals of the image sensing device 3 are supplied to the gain adjust circuit 5. Because the signal level produced as a result of the 3-pixel mixing is 3/4 the signal level of the 4-pixel mixing, the again of the gain adjust circuit 5 is increased to 4/3 the gain of the 4-pixel mixing to make the 3- and 4-pixel-mixed input signal levels to the subsequent circuit equal. Then, the signals are processed by the A/D conversion circuit 6 and the signal processing circuit 7 before being supplied to the vertical interpolation circuit 8. The combinations of pixels to be cyclically mixed on the A field and the B field and the vertical positions of the gravity centers of the mixed signals are shown in Figure 8. As in the static image monitoring of the previous embodiment, the phase difference between the two fields is 180 degrees. Because the sampling phases of the fields are deviated from the ideal 180-degree phase difference, the vertical position of the gravity centers are corrected by the vertical interpolation circuit 8. The amount of phase deviation in this operating state is 60 degrees (= 1/2 pixel or 1/6 the line-to-line distance on the same field). To correct the phase deviation evenly on the both fields, the following calculations should be performed.

A field: $Sn' = (Sn \times 11/12) + (Sn-1 \times 1/12)$

B field: $Sn' = (Sn \times 11/12) + (Sn+1 \times 1/12)$

As described earlier, the interpolation process-

ing may use three or more output lines. Next, the horizontal interpolation circuit 9 horizontally expands the signals from that horizontal segment which corresponds to the 4-to-3 aspect ratio with respect to the 720 vertically arranged pixels (i.e., signals from a horizontal 960-pixel segment (=1600 × 720/1200) in this operating state) so that the expanded signals can be output during the entire horizontal effective scanning period. With the above operation, an area of 720 pixels in height and 960 pixels in width can be extracted from the light receiving surface.

Next, when the view angle change is requested again by the view angle change switch 18, two vertically arranged pixels are mixed together, an area of 480 vertically arranged pixels is read out during the vertical effective scanning period, and the horizontal interpolation circuit 9 expands the signals from the horizontal 640-pixel segment and outputs the expanded signals during the entire horizontal effective scanning period to extract an area of 480 pixels in height and 640 pixels in width. (During the two-pixel mixing, because the interlace phase deviation does not occur, the gravity center position correction by the vertical interpolation circuit 8 is not performed.) If a further view angle change is requested by the view angle change switch 18, the operation is restored to a normal state where four vertically arranged pixels are mixed together.

As a result of the above operation, the area extracted from the light receiving surface of the image

sensing device can be changed to three different areas: (A) 960 pixels high by 1280 pixels wide, (B) 720 pixels high by 960 pixels wide and (C) 4880 pixels high by 640 pixels wide. That is, the angle of view can be changed to three different angles. With the area A produced by the 4-pixel mixing taken as a reference, the area B produced by the 3-pixel mixing can provide an image enlarged by 1.33 times and the area C produced by the 2-pixel mixing can provide an image enlarged by two times. It should be noted here that because the three different areas are chosen by changing the number of pixel to be cyclically mixed together in order to make the number of the effective output lines from the imaging device agree with the number of the effective scanning lines of the television system, the angle of view can be changed while maintaining a good image with no image quality degradation in the vertical direction, when compared with an ordinary so-called digital zoom which generates effective scanning lines of signals by interpolating a small number of output lines. During the monitoring of a static image, too, it is possible to perform the similar operation of changing the angle of view by changing the number of pixel rows to be cyclically mixed together.

As described above, in addition to the advantages provided by the previous embodiment, this embodiment can also realize the view angle change with little image quality degradation even for still images by using an image sensing device with a large number of pixels and changing

the number of pixels to be cyclically mixed together.

Further, because changes in signal level caused when the number of pixels to be cyclically mixed is changed are absorbed by the gain adjust means, the input signal level to the subsequent signal processing means can be kept constant.

While in this embodiment, the view angle change is performed by the view angle change switch 18, the angle of view may be changed continuously by a zoom switch. In this case, when the magnification factor does not reach the value that is obtained by changing the pixel mixing, the digital zoom performs the ordinary interpolation processing. In this embodiment, when the magnification factor is 1 or more and less than 1.33, the 4-pixel mixing is performed; for the factor of 1.33 or more and less than 2, the 3-pixel mixing is done; and for the factor of 2 or higher, the 2-pixel mixing is carried out. The mixing operation may be interlocked with an optical zooming mechanism.

Regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, this embodiment, as in the previous embodiment, may also use an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of those numbers of pixels which are at least two of integers equal to or less than the integral

part of a quotient of N divided by M. The use of this image sensing device can form a variety of constructions essentially equal in the working principle to this embodiment.

Next, a further embodiment of the present invention will be described. The overall configuration of this embodiment is similar to that of Figure 1, except that the inner structure of the image sensing device 3 is different. The configuration of the image sensing device in this embodiment is shown in Figure 10. In Figure 10, denoted 30 are pixels formed of photodiodes, which are arranged horizontally and vertically in a grid pattern. On these grid-arrayed pixels three types of color filters that pass yellow (Ye), green (G) and cyan (Cy), respectively, are arranged in so-called vertical stripes.

In this embodiment, the image sensing device has an array of pixels measuring 864 pixels vertically and 1152 pixels horizontally. A vertical transfer unit 32 is a CCD which is driven by six phase pulses V1, V2, V3, V4, V5, V6. This CCD has a two-gate structure in which each pixel corresponds to two phase pulses and six gates corresponding to the six phase pulses are repeated for every three pixels. Transfer gates 31 for transferring the signal charge of each pixel to the vertical transfer unit 32 are commonly connected to respective gates of the vertical transfer unit 32 corresponding to the pulses V1, V3, V5. An operation to transfer the signal charge from each pixel to the vertical transfer unit 32 in response to peak values

of pulses applied to the commonly connected gates and an operation to transfer the charge vertically are performed separately.

A horizontal transfer unit 33 horizontally transfers the charges supplied from the vertical transfer units 32 and outputs them successively through an output amplifier 34 from the output terminal. This image sensing device, unlike the one in the previous embodiment, cannot vertically transfer all pixels independently of each other, but can mix together the signal charges of three vertically adjoining pixels inside the vertical transfer unit 32 before transferring them.

First, the operation performed in this embodiment during the moving video mode will be explained. In the image sensing device of this embodiment the effective number of vertically arranged pixels is 864. If three pixels are vertically mixed, the signals of the 720 (=240×3) of the 864 vertically arranged pixels can be used as the effective signals and the remaining 144 (= 864 - 720) pixels can be used as the image-unstability correction pixel area.

Figure 11 shows the timings of vertical drive pulses for the image sensing device of Figure 10 during this operation mode, with V1, V2, V3, V4, V5, V6 representing the six phase drive pulses applied to the respective gates of the CCD or vertical transfer unit 32. In Figure 11, during a period T1 included in the vertical blanking period, the drive pulses V1, V3 and V5 are held high to

cause the signal charge of each pixel to be transferred to under the V1, V3 and V5 gates of the vertical CCD. Then, the V2 and V4 pulses are changed from low level to middle level to mix the charges of the adjoining three pixels. After the mixing, the V5 pulse is changed from middle level to low level to hold the mixed signal charges under the V1, V2, V3, V4 gates.

Next, a series of operations performed during a period T2 (changing the drive pulses from middle level to low level or from low level to middle level in the order of V1, V2, V3, V4, V5 and V6) causes one mixed output line (3 pixel rows) to be transferred and held again under the V1, V2, V3, V4 gate. By repeating this series of operations, a desired number of output lines of mixed signal charges can be transferred.

In Figure 11, during a period T3 included in the vertical blanking period before the vertical effective scanning period and during a period T4 included in the vertical blanking period after the vertical effective scanning period, the transfer operation for one output line is repeated a total of 144 times to transfer 144 output lines of signal charges not used for image forming to the horizontal transfer unit 33 at high speed during the vertical blanking periods. During subsequent periods T5 and T6 in the vertical blanking periods, the horizontal transfer unit 33 is driven for predetermined periods to output the signal charges transferred to the horizontal transfer unit 33 from the output terminal.

Next, in the vertical effective scanning period of Figure 11, the one-output-signal-line transfer operation is performed during each horizontal blanking period. Then, during the horizontal effective scanning period, the horizontal transfer unit 33 is driven to read out the signal charges from the horizontal transfer unit 33. With this operation the signal charges of three pixels mixed together can be read out in a way conforming to the television system. As shown in Figure 11, the signals for the A field are mixed by changing the V2 and V4 pulses to middle level after transferring the signals from the pixels to the vertical transfer unit 32. The signals for the B field, on the other hand, are mixed by changing the V2 and V6 pulses to middle level. With this mixing method, the combinations of pixels to be cyclically mixed together can be changed from one field to another, thereby realizing the interlaced scanning. The output signals from the image sensing device are processed in the similar manner to that of the previous embodiment. A vertical interpolation circuit 8 performs the gravity center correction, as in the 3-pixel mixing in the previous embodiment, and a horizontal interpolation circuit 9 performs interpolation processing to match the aspect ratio with that of the television system.

Next, the operation during the monitoring in the static image mode will be explained. It is assumed that the still image photographing is done by using all effective pixels of the image sensing device, as in the previous

embodiment. The image sensing device of this embodiment has 864 vertically arranged pixels and, when 3-pixel mixing is done as in the moving video taking, the number of output lines is 288 (=864/3), which means that these signal lines cannot be read out in a manner conforming to the television system. Hence, during the monitoring in the static image mode, vertical 6-pixel mixing is performed. The 6-pixel mixing can be achieved by transferring to the horizontal transfer unit 33 in each horizontal blanking period two output lines of signal charges each of which line has been generated by vertically mixing three pixels within the vertical transfer unit 32. The 6-pixel mixing can reduce the number of output lines from the image sensing device down to 144 (= 864/6) lines. The output signals of the image sensing device that were reduced to 144 output lines are interpolated by the vertical interpolation circuit 8 to transform the 144 output lines of signals into 240 lines of signals, which conform to the television system. To generate 240 lines of signals from the 144 lines requires interpolation processing that generates five lines from three lines (144/240 = 3/5).

Figure 12 shows how the interpolation is performed using two adjoining output lines. Let three output lines of the image sensing device be n, n+1 and n+2. The five output lines of signals can be generated from the following calculations.

$$n' = n$$

$$n' + 1 = n/2 + (n+1)/2$$

$$n' + 2 = n + 1$$

$$n' + 3 = (n+1)/2 + (n+2)/2$$

$$n' + 4 = n + 2$$

Three or more output lines of signals may be used for interpolation processing. With the above operation, television signals can be generated by using signals of all pixels of the image sensing device also during the monitoring in the static image mode.

Next, the operation performed when the recording is requested by the record button 15 will be explained. In the recording process, the mixing processing is not performed and signals of all pixels need to be read independently of each other in order to obtain high-resolution signals. To realize this, the aperture 2 is first closed and then, during the period T2 in the pulse timing diagram of Figure 11, only the V1 pulse is raised to high level to transfer the signal charge of only the pixel adjacent to the V1 gate to the vertical transfer unit 32. Then, the vertical transfer unit 32 and the horizontal transfer unit 33 are successively driven to read out the signal charges. Similarly, the V3 pulse is raised to high level to read the signal charge of the pixel adjacent to the V3 gate, followed by raising the V5 pulse to high level to read the signal charge of the pixel adjacent to the V5 gate. With the above processing, the signal charges of all pixels can be read out independently in three successive operations. The signal charges thus read out are recorded in the recording unit 10. At this time, they are

rearranged properly to reconstruct the pixel arrangement on the light receiving surface of the image sensing device.

As described above, this embodiment offers the following advantages. If the number of vertically arranged pixels is not an integral multiple of the number of scanning lines of the television system, the signals conforming to the television system can be generated from the whole area of effective pixels by performing the pixel mixing and the vertical interpolation.

In this embodiment, as in the previous embodiment, regardless of the number of pixels in the image sensing device, the structure of the image sensing device or the television system employed, a variety of constructions essentially equal in the working principle to this embodiment can be realized by using an image sensing device that has an arbitrary number of vertically arranged pixels N three or more times the number of effective scanning lines M of each field and which allows the vertical mixing or culling of that number of pixels which is greater by at least one than the integral part of a quotient of N divided by M.

Next, a further embodiment of the present invention will be explained. This embodiment differs from the previous embodiments in that the image sensing device have different arrangements of color filters. Figures 13A and 13B show arrangements of color filters in this embodiment. These color filters in both examples are arranged in vertical stripes and, regardless of the number of pixels to

be vertically mixed or culled, the R, G, B primary color signals can be generated from one line of output signals. Figure 13A shows a color filter arrangement on the image sensing device in which white filters (W = passing all colors) are used instead of the green (G) filters used in the previous embodiment. The R, G, B signals can be obtained by the following calculations.

$$R = W - Cy$$

$$G = Ye + Cy - W$$

$$B = W - Ye$$

When this color filter arrangement is used, a higher sensitivity can be obtained than the color filter arrangement of the previous embodiment. Figure 13B show a color filter arrangement that uses, in stead of complementary colors, color filters that pass the primary colors R, G, B. This color filter arrangement can directly produce the primary color signals, R, G, B and can provide a camera with good color purity and good color S/N.

With the above color filter arrangements, it is possible to produce color signals corresponding to the three kinds of color filters from each line of output signals at all times no matter how many pixels are vertically mixed or culled. Therefore, color signals conforming to the television system can be generated easily.

Electronic Patent Application Fee Transmittal

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Filing Date:	
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Filer:	Ayal I. Sharon/Krista Hargrove
Attorney Docket Number:	500.38315VC3

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1090**

Electronic Acknowledgement Receipt

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/845,266	Filing Date 07/28/2010	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	**330**
☒ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	**540**
☒ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	**220**
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	* 0	X $ =		OR	X $52 =	**0**
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0	X $ =			X $220 =	**0**
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	**1090**

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
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CONFIRMATION NO. 9653

20457
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SUITE 1800
ARLINGTON, VA 22209-3873

FILING RECEIPT

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Date Mailed: 08/11/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

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Foreign Applications

JAPAN 00-006064 01/11/2000

Request to Retrieve - This application either claims priority to one or more applications filed in an intellectual property Office that participates in the Priority Document Exchange (PDX) program or contains a proper **Request to Retrieve Electronic Priority Application(s)** (PTO/SB/38 or its equivalent). Consequently, the USPTO will attempt to electronically retrieve these priority documents.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/845,266**

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Title

ELECTRIC CAMERA

Preliminary Class

382

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出願番号 Application Number:	特願２０００－００６０６４
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出願人 Applicant(s):	株式会社日立製作所

２０１０年　８月１３日

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【発明の名称】撮像装置

【請求項の数】 16

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【書類名】　明細書

【発明の名称】　撮像装置

【特許請求の範囲】

【請求項１】

テレビジョン方式の一表示画面の有効走査線数Mの３倍以上の数Nの画素を垂直方向に、任意の数の画素を水平方向に配した受光面を備えた撮像素子と、

該画素配列の各画素に蓄積された信号電荷を、NをMで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのK画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Mに相当するライン数の出力信号を得るように該撮像素子を駆動する駆動手段と、

前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段とを備えていることを特徴とする撮像装置。

【請求項２】

前記駆動手段は、前記撮像素子の垂直方向の画素数Nから前記混合または間引き周期Kと前記有効走査線数Mとの積K･Mを減じた数の垂直画素に対応する画素領域の信号電荷を前記テレビジョン方式の垂直帰線期間内に読み出しまたは掃き捨てることにより、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の画素の内K･Mの垂直画素に相当する画素領域の信号電荷を切り出して、前記有効走査線数Mに相当するライン数の出力信号を得るように前記撮像素子を駆動することを特徴とする請求項１記載の撮像装置。

【請求項３】

前記信号処理手段は、該撮像素子の該受光面の内、該切り出した垂直領域に対して該テレビジョン方式の縦横比と略等しくなる水平領域部分に相当する出力信号期間のみを切り出して該テレビジョン方式の有効水平走査期間全体にわたって出力する機能を有することを特徴とする請求項１または２記載の撮像装置。

【請求項４】

前記駆動手段は、該テレビジョン方式の表示周期毎に該混合または間引きの画素位置をずらすことによりインターレース信号を出力するように該撮像素子を駆動することを特徴とする請求項１～３のいずれか１項に記載の撮像装置。

【請求項５】

前記信号処理手段は、該混合または間引きによって得られるインターレース出力信号の垂直方向の重心位置が表示周期毎に１８０度の位相差となるように補間する機能を有することを特徴とする請求項４記載の撮像装置。

【請求項６】

前記撮像素子は、該垂直方向の画素数Nを該有効走査線数Mで除した商の整数部またはそれ以下の整数の内少なくとも二つの整数画素周期で垂直方向に混合または間引きすることができ、該駆動手段は、該少なくとも二つの整数に対応した少なくとも二つのモードで、該撮像素子を駆動することを特徴とする請求項１～５のいずれか１項に記載の撮像装置。

【請求項７】

前記撮像素子の該駆動手段は、装置内部または外部に設けたズームスイッチ等の画角変化を指示するスイッチ手段からの入力情報に対応して、該混合または間引きの画素周期を変化させることを特徴とする請求項６記載の撮像装置。

【請求項８】

前記撮像素子の出力信号の利得を調整する利得調整手段を有し、該撮像素子の混合の画素周期が変化した時にも、該利得調整手段の出力信号レベルが同一になるように、混合画素周期に対応して該利得調整手段の利得を変化させることを特徴とする請求項６または７記載の撮像装置。

【請求項９】

前記撮像装置の手振れを検出する手振れ検出手段を有し、該手振れ検出手段で検出した手振れ量に応じて、該受光面内における垂直方向及び水平方向の切り出し位置を、該手振れを補正するように変化させることを特徴とする請求項１～８のいずれか１項に記載の撮像装置。

【請求項１０】

テレビジョン方式の一表示画面の有効走査線数Mの３倍以上の数Nの画素を垂直方向に、任意の数の画素を水平方向に配した受光面を備えた撮像素子と、該画素配列の各画素に蓄積された信号電荷を、NをMで除した商の整数部より大きな整数であるところのK画素周期で、垂直方向に混合または間引きを行い、前記テレビ

ジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数NのK分の一のライン数の出力信号を得るように前記撮像素子を駆動する駆動手段と、
前記撮像素子の出力信号を用いて画像信号を生成する機能を有する信号処理手段とを備えていることを特徴とする撮像装置。

【請求項１１】

テレビジョン方式の一表示画面の有効走査線数Mの３倍以上の数Nの画素を垂直方向に、任意の数の画素を水平方向に配した受光面を備えた撮像素子と、

該画素配列の各画素に蓄積された信号電荷を、NをMで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのK画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Mに相当するライン数の出力信号を得るように該撮像素子を駆動する第１の駆動手段と、

該画素配列の各画素に蓄積された信号電荷を、NをMで除した商の整数部より大きな整数であるところのK画素周期で、垂直方向に混合または間引きを行い、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数NのK分の一のライン数の出力信号を得るように前記撮像素子を駆動する第２の駆動手段と、

前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段とを備え、前記第１の駆動手段による駆動と前記第２の駆動手段による駆動とを、装置内部または外部に設けたスイッチ手段からの入力情報に対応して選択、切り替えを行うことを特徴とする撮像装置。

【請求項１２】

シャッターボタン等のトリガー手段を有し、該トリガー手段によりトリガーが発生した時には、該撮像素子の各画素に蓄積した信号電荷を混合せずに全画素独立で読み出すことを特徴とする請求項１～１１のいずれか１項に記載の撮像装置。

【請求項１３】

前記撮像素子の受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配したことを特徴と

する請求項１～１２のいずれか１項に記載の撮像装置。

【請求項１４】

前記第一、第二、および第三の各色は各々黄色、緑、シアンであることを特徴とする請求項１３記載の撮像装置。

【請求項１５】

前記第一、第二、および第三の各色は各々黄色、白色、シアンであることを特徴とする請求項１３記載の撮像装置。

【請求項１６】

前記第一、第二、および第三の各色は各々赤、緑、青であることを特徴とする請求項１３記載の撮像装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】

本発明は、固体撮像素子を用いたビデオカメラ、ＶＴＲ一体型カメラ、電子スチルカメラ等の撮像技術に係り、特に、画素数の多い固体撮像素子を用いた撮像装置に関する。

【０００２】

【従来の技術】

ＣＣＤ（Charge Coupled Device）等の固体撮像素子を用いた撮像装置として、動画撮影を目的としたいわゆるビデオカメラと、静止画撮影を目的としたいわゆる電子スチルカメラが存在する。また、近年では、動画撮影用の装置であっても静止画撮影機能を有したもの、或いは静止画撮影用の装置であっても動画撮影機能を有したものも存在している。

【０００３】

動画撮影を目的としたいわゆるビデオカメラでは、一般的にテレビモニター等の表示装置での表示を前提としており、ＮＴＳＣ、ＰＡＬ等のテレビジョン方式に準拠した出力信号を得るように構成されている。そのため、このような装置に用いられる撮像素子の垂直方向の有効画素数は、テレビジョン信号の生成を前提として定まっている。例えば、ＮＴＳＣ方式ではフィールドあたりの有効走査線

数（フィールドあたりの全走査線数から垂直帰線期間に含まれる走査線数を除いた走査線数であり、実際に表示装置に表示される走査線数の意味）は約２４０本でかつフィールド毎に飛び越し走査（インターレース走査）を行うが、これを実現するために撮像素子の垂直方向の有効画素数は約４８０画素が基準となっている。すなわち、各フィールドで垂直方向に隣接する２画素の信号を撮像素子内部或いは撮像素子外部で混合することによって約２４０本の走査線を生成し、かつフィールド毎に混合する画素の組み合わせを変えることによって飛び越し走査を実現している。

【０００４】

また、ＮＴＳＣ方式の動画撮像用の撮像素子として、手振れ補正用の画素領域を有効画素領域に付加して、垂直方向に約４８０画素以上の有効画素を有するものもあるが、この場合でも約４８０以上の画素領域は垂直帰線期間中に高速に読み出されて、有効な信号としては用いられず、画像信号はあくまでも垂直約４８０画素領域の信号から生成される。このような撮像装置で静止画を撮影する場合、動画撮影時と同一の画素領域の信号からＪＰＥＧ（Joint Photographic Expert Gpoup）等の静止画信号を生成することは比較的容易であるが、得られる画素数が垂直４８０画素程度に限定されてしまい、より高精細の静止画信号を得ることが出来ないという問題が有る。

【０００５】

この問題を軽減する手段として、前述の手振れ補正領域を持つ撮像素子を用いた撮像装置においては、静止画撮影時には手振れ補正用画素領域を含めた全有効画素領域を用いる事が考えられるが、静止画撮影時においても撮影画像確認などの為にモニタリングをする必要が有り、その為には読み出した全有効画素の信号からテレビジョン方式に準拠した信号を生成する必要が有る。

【０００６】

このような装置の従来例として特開平１１－１８７３０６号公報に記載の装置が提案されている。この公報に開示された装置では、先ず、テレビジョン方式の１フィールド期間の複数倍の時間を要して全有効画素の信号を読み出してフィールドメモリー等の記憶手段に記憶し、しかる後に補間処理等によってテレビジョ

ンのフィールド周期、水平走査周期に対応した信号への変換を行っている。

【０００７】

しかしながら、この従来例では、信号変換のために、フィールドメモリー等の大規模な処理回路が必要であり、また、撮像素子からの読み出し周期がフィールド周期の複数倍となるため動解像度が劣化する。また、このような手段を用いても、静止画信号として得られる画素数は動画時の有効画素数に手振れ補正画素領域を加えた画素数が限度である。

【０００８】

一方、静止画撮影を目的としたいわゆる電子スチルカメラでは、より高精細な静止画信号を得るために、近年動画撮影用の撮像素子に対してより多画素化した撮像素子を用いる傾向に有る。このような装置で動画撮影、またはモニタリングを行う場合には、やはりテレビジョン方式に準拠した信号を生成する必要があるが、前記多画素化した撮像素子では、画素数が必ずしもテレビジョン方式の走査線数に対応していないため、何らかの変換手段が必要である。

【０００９】

このような変換手段としては、例えば、前述の手振れ補正用画素領域を有した動画撮像装置と同様に、フィールド周期よりも長い時間を用いて撮像素子から信号を読み出し、補間によってテレビジョン信号を生成する方法が有るが、この場合には前述の問題点と共に、画素数が多くなるにつれて、更に読み出し周期が長くなり動解像度が更に劣化する。

【００１０】

また、この問題を軽減する手段として、撮像素子内部で画素信号を混合または間引きすることにより、読み出すべき信号数を減少し、読み出し周期を短くする装置の例が特開平９－２７０９５９号公報に開示されている。この装置においては、前記動解像度劣化の問題は軽減されるが、テレビジョン方式に同期した信号を生成するための時間軸変換を行うために、フィールドメモリー等の大規模な処理回路を必要とし、また、所望の混合、間引きを行うために撮像素子自体も特殊な構造を取る必要が有る。

【００１１】

【発明が解決しようとする課題】

上述のように従来技術の撮像装置では、動画撮像装置で静止画撮影を行う場合には画素数の不足、静止画撮像装置で動画撮影する場合には、回路規模の増加と共に、動画画質の劣化という問題が有り、一つの撮像装置で動画、静止画とも十分な画像を得ることが難しい。また、静止画用の多画素撮像素子を用いて十分な動画画質を得るためには、前記問題点の解決の他に、手振れ補正機能等を実現するための読み出し領域の切り出しを行う必要も有るが、上記従来技術ではこれを実現する手段も提供されていない。

【００１２】

本発明の目的は、かかる問題を解決し、静止画に対しても十分な画素数をもつ多画素の撮像素子を用いて、高精細な静止画に加えて、フィールドメモリー等により回路規模を増加すること無く、画質劣化を低減した動画撮影を可能とする撮像装置を提供すること、、また、併せて手振れ補正機能の実現も可能とした撮像装置を提供することにある。

【００１３】

【課題を解決するための手段】

上記目的を達成するため、本発明のうち、その一つとしては、テレビジョン方式の一表示画面の有効走査線数Mの３倍以上の数Nの画素を垂直方向に、任意の数の画素を水平方向に配した受光面を備えた撮像素子と、該画素配列の各画素に蓄積された信号電荷を、NをMで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのK画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Mに相当するライン数の出力信号を得るように該撮像素子を駆動する駆動手段と、前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段とを備えた撮像装置とする。

【００１４】

【発明の実施の形態】

以下、本発明の実施形態を図面を用いて説明する。図１は、本発明の撮像装置の一つの実施形態を示す構成図である。

【００１５】

図１において、符号１はレンズ、符号２は絞り、符号３は撮像素子、符号４は撮像素子を駆動する駆動回路、符号５は利得調整回路、符号６はアナログーデジタル変換（Ａ／Ｄ変換）回路、符号７は信号処理回路、符号８は垂直方向の補間処理を行う垂直補間回路、符号９は水平方向の補間処理を行う水平補間回路、符号１０は画像信号を記録する磁気テープ、半導体メモリー、光ディスク等の記録媒体を含む記録部、符号１１は動作状態に応じてこれらの構成要素の制御を行う制御回路、符号１２は標準テレビジョン信号への変調処理等を行うエンコーダ回路、符号１３はデジタルーアナログ変換（Ｄ／Ａ変換）回路、符号１４は動画撮影、静止画撮影等の動作モードの切り替えを行うモード切り替えスイッチ、符号１５は記録開始／停止の指示を行うための記録ボタン、符号１６ａ、１６ｂはそれぞれ撮像装置の縦方向、横方向の手振れを検出する手振れセンサー、符号１７は手振れセンサーの出力信号から撮像装置の手振れを判定する手振れ判定回路を示している。

【００１６】

上記の構成において、レンズ１から入射された光は、絞り２を介して撮像素子３の受光面上に結像して電気信号に変換される。本実施形態では、撮像素子３をＣＣＤ型撮像素子としている。図２にこの撮像素子３の構成を示す。図２において、符号３０はフォトダイオードで構成されている画素であり、水平、垂直方向に格子状に配置されている。格子状に配された画素には、それぞれ黄色（Ｙｅ），緑（Ｇ），シアン（Ｃｙ）の各色を透過する色フィルターが、水平方向に３画素周期で繰り返し配され、垂直方向には同一の色を配されたいわゆる縦ストライプ状に配されている。画素数は任意であるが、本実施形態では垂直方向に１２００画素、水平方向に１６００画素が配置されているものとする。垂直転送部３２は、Ｖ１，Ｖ２，Ｖ３の３相のパルスで駆動されるＣＣＤである。本ＣＣＤは１画素あたり３相パルスに対応する３ゲート構成となっており、各画素の信号電荷を独立で垂直方向に転送することが可能である。画素の電荷を垂直転送部に転送するための転送ゲート３１は、垂直転送部３２のＶ２パルスに対応するゲートと共通化されており、共通化されたゲートに対して印加するパルスの波高値によっ

て画素からの電荷を垂直転送部に転送する動作と、垂直方向への転送動作とが区別して行われる。水平転送部３３は、垂直転送部３２から転送された電荷を水平方向に転送し、出力アンプ３４を介して順次出力端子から出力する。

【００１７】

図１の説明に戻る。以下、まずモード切り替えスイッチ１４によって動画撮影モードが選択された時の動作について説明する。本実施形態における撮像素子の垂直方向の画素数は１２００であるため、ＮＴＳＣ方式の場合のフィールド有効走査線数を２４０ラインとすると、垂直方向に５（＝１２００画素／２４０ライン）画素の混合を行うことにより撮像素子からの出力信号ライン数を有効走査線数と一致させることが出来る。

【００１８】

しかしながら、本実施形態では、後に説明する手振れ補正機能を実現するために、動画撮影モード時には、垂直方向に４画素の混合を行うこととする。垂直方向に４画素の混合を行う場合には、垂直方向１２００画素の内、９６０（＝２４０ライン×４画素）画素分の領域の信号を有効な信号として用い、残りの２４０（＝１２００（全画素）－９６０（有効画素））画素分の領域の信号は出画に用いない。図３は本動作モードにおける撮像素子の垂直駆動パルスのタイミングを示した図であり、Ｖ１，Ｖ２，Ｖ３は前記垂直転送部３２であるＣＣＤの各ゲートに入力される３相の駆動パルスである。

【００１９】

図３において、垂直帰線期間に含まれる期間Ｔ１において駆動パルスＶ２をハイレベルの電圧とすることによって各画素に蓄積された信号電荷は垂直ＣＣＤのＶ２ゲート下に転送される。次にＴ２で示す期間における動作、すなわちＶ２パルスがミドルレベルの期間にＶ３パルスをローレベルからミドルレベルに変化させ、次にＶ３パルスがミドルレベルの期間にＶ２パルスをミドルレベルからローレベルに変化させた後、Ｖ１パルスをローレベルからミドルレベルに変化させ、次にＶ１パルスがミドルレベルの期間にＶ３パルスをミドルレベルからローレベルに変化させた後、Ｖ２パルスをローレベルからミドルレベルに変化させ、最後にＶ１パルスをミドルレベルからローレベルに変化させるという一連の動作によ

って、Ｖ２ゲート下の信号電荷は一ライン分転送されて再びＶ２ゲート下に保持される。

【００２０】

この一連の動作を繰り返すことによって、信号電荷を任意のライン数分転送することができる。図３において、垂直有効走査期間（垂直帰線期間を除いた実際に表示させる画像に対応する垂直走査期間の意味）の前の垂直帰線期間に含まれる期間Ｔ３および垂直有効走査期間の後の垂直帰線期間に含まれる期間Ｔ４において、合わせて２４０回上記一行分の転送動作を繰り返すことによって出画に用いない２４０行分の信号電荷を垂直帰線期間中に水平転送部３３に転送する。例えば期間Ｔ３で１２０回、期間Ｔ４で１２０回の一連の転送を行うと、受光面上の上下それぞれ１２０行分の信号電荷が垂直帰線期間内の期間Ｔ３及び期間Ｔ４に水平転送部３３に転送される。その後の垂直帰線期間内の期間Ｔ５及び期間Ｔ６に水平転送部３３をそれぞれ一定期間駆動することによって水平転送部に転送された電荷は出力端から出力されるが、垂直帰線期間中であるので有効な信号としては用いられない。

【００２１】

次に、図３の垂直有効走査期間では、各水平帰線期間に上記一行分の転送動作を４回行うことにより４行分の信号電荷が水平転送部３３に転送され水平転送部３３で混合される。その後水平有効走査期間（水平帰線期間を除いた実際に表示させる画像に対応する水平走査期間の意味）に水平転送部３３を駆動して水平転送部の信号電荷を読み出すことによって、テレビジョン方式に同期した出力信号を得ることができる。また、Ａフィールドで上記動作を行い、Ｂフィールドでは期間Ｔ３の転送行数を１２２行、期間Ｔ４の転送行数を１１８行とすると、フィールド毎に混合される４行の組み合わせが２行分ずれ、図４に示すようにインターレース走査を行う事ができる。（図４は撮像素子受光面を示しているため、表示画面上とは上下反転している）

図１の説明に戻る。撮像素子３の出力信号は利得調整回路５で利得調整された後、Ａ／Ｄ変換回路６でデジタル信号に変換され、信号処理回路７で色信号の生成、ガンマ補正、ホワイトバランス処理、輪郭強調等の色信号処理、輝度信号処

理を施される。ここで本実施形態における撮像素子は、前記黄色（Ｙｅ），緑（Ｇ），シアン（Ｃｙ）の縦ストライプ状の色フィルターが配されたものであるため、どのような画素数で垂直方向に混合を行っても、常に１ラインの出力信号から、Ｙｅ，Ｇ，Ｃｙの各色信号が点順次で得られる。これらの色信号から、３原色信号Ｒ、Ｇ、Ｂ信号は以下の演算で得ることが出来る。

【００２２】

Ｒ＝Ｙｅ－Ｇ

Ｂ＝Ｃｙ－Ｇ

Ｇ＝Ｇ

Ｒ，Ｇ，Ｂ信号は信号処理回路７でホワイトバランス処理、ガンマ補正処理等を施された後、Ｒ－Ｙ，Ｂ－ＹまたはＵ，Ｖ等の色差信号に変換される。その後、輝度信号および色差信号は垂直補間回路８を介して水平補間回路９に入力される。本動作状態では垂直補間回路では処理は行われず通過するのみである。水平補間回路では水平方向の補間処理が行われる。

【００２３】

図５は撮像素子の受光面を示した図である。前述のように本実施形態の本動作状態では、垂直有効走査期間に読み出される信号は垂直１２００画素の内の９６０画素に相当し、水平方向は全画素（１６００画素）に相当するする領域であり、図５に斜線部Ａで示している。ここで、撮像素子の受光面全体の縦横比が縦：横＝３：４であった場合、斜線部Ａの領域はそれに対して横長となるため、水平方向全画素分の信号をＮＴＳＣ方式等縦横比３：４のテレビジョン方式の表示機器で表示すると水平方向が圧縮された縦長の画像となる。従って、図５において斜線部Ｂで示した、テレビジョン方式の縦横比と合致した水平領域の信号のみを水平有効走査期間に出力する必要が有る。テレビジョン方式の縦横比が３：４の場合には斜線部Ｂの水平画素数は１２８０（＝９６０（垂直方向有効画素）×（４／３））となる。

【００２４】

図１の説明に戻る。水平補間回路９では水平１２８０画素分の信号を補間処理により水平方向に伸長し水平有効走査期間全体にわたって出力できるようにし、

また、必要に応じてクロックの乗せ替え等を行う。以上の動作によって、受光面上の垂直９６０画素、水平１２８０画素の領域を切り出して、テレビジョン方式に同期した信号として得ることが可能となる。その後、輝度信号及び色差信号はエンコーダ１２でテレビジョン信号へのエンコード処理を施され、Ｄ／Ａ変換回路１３でアナログ信号に変換されて出力される。また、記録ボタン１５によって記録の指示がなされた場合には、記録部１０で信号の記録が行われる。この時、必要に応じてＭＰＥＧ（Moving Picture Expert Group）等の圧縮処理を施すこともできる。

【００２５】

次に、手振れ補正の動作に関して説明する。撮像装置の縦方向、横方向の手振れを検出する手振れセンサー１６ａ、１６ｂによって検出された振れ情報は手振れ判定回路１７に入力され、ここで手振れ量、方向などが判定され、撮像素子の受光面上での垂直方向、水平方向の画素数に換算される。換算された画素数に対して手振れを打ち消す方向に受光面上での切り出し位置（有効画素領域）をずらすことによって手振れを補正することができる。切り出し位置の移動は、垂直方向に関しては、前述の図３の期間Ｔ３および期間Ｔ４における転送行数を変化させることにより実現でき、水平方向に関しては前述の水平補間回路における、補間開始位置を変化させることにより実現することができる。

【００２６】

以上動画撮影モード時の動作に関して説明した。次に、モード切り替えスイッチ１４によって静止画撮影モードが選択された時の動作について説明する。

【００２７】

静止画撮影モードにおいても、記録ボタン１５によって記録の指示がなされるまでは、撮影画角の確認等のためのモニタリングを行うために、テレビジョン方式に準拠した信号の出力を行う。ただし、静止画撮影時にはできるだけ高精細な信号を得るために、本実施形態では、動画撮影時とは異なり撮像素子の全有効画素数を用いて撮影を行う。従って、モニタリング時には、全画素領域の信号から、テレビジョン信号を生成する必要がある。

【００２８】

本実施形態の撮像素子の垂直方向の画素数は１２００画素であるため、ＮＴＳＣ方式の有効走査線数を２４０ラインとすると、垂直方向に５（＝１２００／２４０）画素の混合を行うことにより、出力信号ライン数を有効走査線数と一致させることができる。このように撮像素子を動作させるために、図３に示したパルスタイミング図において、垂直有効走査期間中の各水平帰線期間に前記１行分の転送動作を５回行う。これにより５ライン数分の信号電荷を水平転送部３３で混合することができる。また、垂直帰線期間中の期間Ｔ３およびＴ４での転送動作は、インターレース走査を行うために、Ｂフィールドの期間Ｔ３において２行分の転送のみを行い、他の垂直帰線期間では転送動作は行わない（本実施形態では１２００／２４０＝５であり、余りが生じないため、上記以外の転送は不要だが、仮に余りが生じる場合には、余りの画素数分を期間Ｔ３，Ｔ４で転送すれば良い）。

【００２９】

水平転送部３３で混合された電荷は水平有効走査期間に水平転送部を駆動して読み出す。以上により撮像素子の全画素の信号電荷をテレビジョン方式に同期して読み出すことができる。撮像素子３の出力信号は動画撮影時と同様に利得調整回路５で利得調整された後、Ａ／Ｄ変換回路６でデジタル信号に変換され、信号処理回路７で色信号処理、輝度信号処理を施され、垂直補間回路８に入力される。静止画撮影モニタリング時には垂直補間回路８で垂直方向の重心補正の処理を行う。

【００３０】

図６に本動作状態におけるＡフィールド、Ｂフィールドにおける混合される画素の組み合わせおよび混合された信号の垂直方向の重心位置を示す。インターレース走査では、Aフィールド、Bフィールドでの走査線の位置は相互に他フィールドの走査線間の中心の位置であるため、これに対応して撮像系での信号の垂直方向のサンプリングはそれぞれのフィールドで１８０度の位相差となる必要が有る。ところが、本実施形態の本動作状態では混合画素数が５画素であるため、図６に示すように、Ａフィールド、Ｂフィールドでの出力信号の重心位置が１８０度

の位相差に対して、３６度（＝１／２画素、同一フィールドのライン間距離の１／１０）ずれている。これを補正するには、隣接２ラインの信号から補間によって信号を生成すれば良く、例えば同一フィールドのｎラインの信号をSn、ｎ＋１ラインの信号Sn+1とすると、Sn’＝（Sn×９／１０）＋（Sn+1×１／１０）の演算で得られるSn’はｎラインの信号の重心位置に対して１／１０ライン分ｎ＋１ライン方向に重心位置のずれた信号である。Bフィールドの信号に対して上記演算を行うことによってサンプリングの重心ずれの補正が可能であるが、本実施形態では、Aフィールド、Bフィールドの補間の影響を均一にするために、ｎラインの信号を、Aフィールドでは１／２０ライン分ｎ－１ライン方向に、Ｂフィールドでは１／２０ライン分ｎ＋１ライン方向に補正するために、以下の演算を行う。

【００３１】

Ａフィールド：　Sn’＝（Sn×１９／２０）＋（Sn-1×１／２０）

Ｂフィールド：　Sn’＝（Sn×１９／２０）＋（Sn+1×１／２０）

尚、本実施形態では隣接２ラインの信号からの演算によって補間処理を行っているが、更に複数ラインの信号を用いた補間処理を行う事もできる。垂直補間回路８の出力信号は水平補間回路９に入力されるが、本動作状態では水平補間回路では処理は行われず通過するのみである。その後は、動画撮影時と同様に、エンコーダ１２でテレビジョン信号へのエンコード処理を施され、Ｄ／Ａ変換回路１３でアナログ信号に変換されて出力される。以上説明したように、静止画撮影モードでのモニタリング時にも、撮像素子の全画素領域の信号から、テレビジョン信号を生成する事ができる。

【００３２】

次に、記録ボタン１５によって記録の指示がなされた場合について説明する。静止画撮影モードにおけるモニタリング時には、テレビジョン信号を生成するために、撮像素子内で信号を混合する事によって信号量の削減を行っているが、記録する際には高精細な信号を得るために混合処理を行わずに、全画素の信号を独立で読み出す必要がある。これを実現するためには、図３に示したパルスタイミング図において、垂直有効走査期間中の各水平帰線期間の前記１行分の転送動作

を１回のみ行う。これにより１行分の信号電荷のみが水平転送部３３に転送される。その後水平転送部３３を駆動して１行分の信号電荷を読み出す。上記動作を垂直画素数分繰り返す事によって全画素の信号電荷を独立で読み出す事ができる。尚、垂直帰線期間中の期間Ｔ３およびＴ４での転送動作は行わない。

【００３３】

読み出された信号電荷は、利得調整回路５で利得調整された後、Ａ／Ｄ変換回路６でデジタル信号に変換され、信号処理回路７で色信号処理、輝度信号処理を施され、垂直補間回路８、水平補間回路９を介して記録部１０で記録される。この時、垂直補間回路８、水平補間回路９では補間処理は行われない。記録部１０では、記録に際してＪＰＥＧ（Joint Photographic Expert Gpoup）等の圧縮処理を施すこともできる。尚、上記静止画記録動作中はテレビジョン信号の生成はできないため、モニタリング用の出力には、記録開始直前の画像、または単一色の信号等に置き換えたテレビジョン信号を出力する。以上の動作により、撮像素子全画素から得られる高精細な信号を記録する事ができる。なお、本実施形態においては、動画撮影モード時と静止画撮影モード時の記録部は共通としているが、モードによって記録部を各々専用に設けても良い。

【００３４】

以上説明したように、本実施形態では、垂直方向の画素数に上限がなくなるため、静止画に対しても十分な画素数をもつ多画素の撮像素子を用いて、高精細な静止画に加えて、良好な動画撮影が可能になる。

【００３５】

また、信号の混合と垂直帰線期間中の垂直転送により、多画素の撮像素子においてもテレビジョン方式に同期した信号読み出しを可能とし、よって画質劣化を低減し、かつ手振れ補正機能を有した動画撮影および静止画撮影におけるモニタリングを実現することができる。

【００３６】

また、切り出した垂直領域に対してテレビジョン方式の縦横比と略等しくなる水平領域部分に相当する出力信号のみを切り出してテレビジョン方式の有効水平走査期間全体にわたって出力するように構成することによって、垂直方向の切り

出し位置をどのように行っても、テレビジョン方式の縦横比に等しい出力信号を得ることができる。

【００３７】

また、テレビジョン方式の表示周期毎に混合する画素位置をずらすことによりインターレース信号を出力するように撮像素子を駆動することによって、多画素の撮像素子を用いてもインターレース走査を行うことができる。

【００３８】

また、混合によって得られるインターレース出力信号の垂直方向の重心位置が表示周期毎に１８０度の位相差となるように補間することによって、混合周期が奇数の場合のようにインターレースの位相ずれが生じる場合であっても、インターレースずれのない出力信号を得ることができる。

【００３９】

なお、本実施形態においては、撮像素子の垂直画素数を１２００、動画撮影モード時の混合画素数を４、静止画撮影モード時の混合画素数を５としているが、手振れ補正用の画素領域の有無、大きさは任意であるため、各モードにおける混合画素数は、垂直画素数をテレビジョン方式の有効走査線数で除した商の整数部（上記実施例では５）以下であれば任意で良い（必ずしも割り切れる必要はなく、上記例の場合、垂直画素数は１２００以上であっても良い）。

【００４０】

また、静止画撮影時の画素数はテレビジョン方式のフィールド有効走査線数の３倍以上程度の垂直画素数をもてば良い。また、本実施形態では撮像素子の垂直有効走査期間中の出力ライン数を減じるために垂直方向の画素混合を行ったが、画素からの信号電荷を複数ライン中の一ラインしか読み出さない、いわゆる間引きによっても同様に出力ライン数を減じる事ができる。

【００４１】

また、本実施形態では撮像素子の垂直転送部を１画素あたり３相のパルスで駆動するＣＣＤとしたが、上記条件を満たす画素周期での混合または間引きの実現できる形態であれば、撮像素子の構造は任意で良い。

【００４２】

また、本実施形態ではＮＴＳＣ方式の場合について説明を行ったが、ＰＡＬ方式等有効走査線数の異なるテレビジョン方式であっても同様に実現する事ができる。

【００４３】

従って、以上まとめると、テレビジョン方式のフィールド有効走査線数Mの３倍以上の任意の垂直画素数Ｎをもち、かつ、NをMで除した商の整数部以下の整数の内少なくとも一つの整数周期での垂直方向の混合または間引きを行うことのできる撮像素子を用いる事により、本実施形態と要旨を同一にする種々の構成を取る事ができる。

【００４４】

次に本発明による他の実施形態を図７に示した構成図によって説明する。図７の構成図は、図１に示す構成図に対して画角変化指示スイッチ１８を追加したものである。図７において図１に示した構成要素と同一の構成要素に対しては同一の符号を付し、同一の動作を行う場合には説明を省略する。

【００４５】

本実施形態における、動画撮影モード、静止画撮影モード時のモニタリング、および静止画記録の動作は、通常状態においては図１の構成図により説明した前述の実施形態の動作と同様である。次に動画撮影モード時に画角変化指示スイッチ１８により画角変化が指示された時の動作に関して説明する。

【００４６】

本実施形態の通常状態では、前述の実施形態にて説明したのと同様、垂直方向４画素の画素混合と垂直帰線期間中の垂直転送、および水平方向の補間処理により全画素領域の内、垂直９６０画素、水平１２８０画素の領域を切り出してテレビジョン信号を生成するものとする。ただし、画角変化（垂直方向の画質劣化を伴わないズーム機能の意味）指示スイッチ１８により画角変化が指示された時には、まず垂直方向の混合画素数を３画素とし、垂直有効走査期間の前後の垂直帰線期間中に余分な垂直画素領域の信号を読み出す。

【００４７】

本実施形態の場合には、４８０（＝１２００－２４０×３）画素分、混合後のライン数としては１６０（＝４８０／３）ライン分の信号を垂直帰線期間中に読み出せば良い。これにより、垂直７２０画素分の領域の信号を２４０ラインの信号としてテレビジョン方式に同期して読み出す事ができる。前記読み出しを実現するには、図３に示したパルスタイミング図において、垂直有効走査期間中の各水平帰線期間に３ライン数分の転送動作を行い、垂直帰線期間中の期間Ｔ３およびＴ４での転送行数を１６０ラインとすれば良い。また、フィールド毎に混合の組み合わせを変えてインターレース走査を行う。

【００４８】

撮像素子３の出力信号は利得調整回路５に入力されるが、３画素混合時の信号レベルは４画素混合時に比べて３／４倍になっているため、利得調整回路の利得を４画素混合時に対して４／３倍して後段の回路の入力信号レベルを同一にする。その後Ａ／Ｄ変換回路６、信号処理回路７で各々処理を施され、垂直補間回路８に入力される。３画素混合の場合のＡフィールド、Ｂフィールドにおける混合される画素の組み合わせおよび混合された信号の垂直方向の重心位置は図８に示す通りであり、前述の実施形態における静止画撮影モニタリング時と同様にフィールド間のサンプリング位相が１８０度の位相差からずれているため、垂直補間回路８で垂直方向の重心補正の処理を行う。本動作状態における位相のずれ量は６０度（＝１／２画素、同一フィールドのライン間距離の１／６）であり、これを両フィールドで均一に補正するためには、以下の演算を行えば良い。

【００４９】

Ａフィールド：　$Sn' = (Sn \times 11/12) + (Sn-1 \times 1/12)$

Ｂフィールド：　$Sn' = (Sn \times 11/12) + (Sn+1 \times 1/12)$

尚、前述のように、３ライン以上の複数ラインの信号を用いた補間処理を行う事もできる。次に水平補間回路９で、垂直７２０画素に対して縦横比が３：４となる水平領域（本動作状態では水平９６０（＝１６００×７２０／１２００）画素の領域）の信号を補間処理により水平方向に伸長し水平有効走査期間全体にわたって出力できるようにする。以上の動作によって、受光面上の垂直７２０画素

、水平９６０画素の領域を切り出すことができる。

【００５０】

次に、画角変化指示スイッチ１８により再度画角変化が指示された時には、垂直方向の混合画素数を２画素とし、垂直４８０画素分の領域を垂直有効走査期間に読み出し、水平補間回路で６４０画素分の領域の信号を伸長し水平有効走査期間全体にわたって出力する事により、受光面上の垂直４８０画素、水平６４０画素の領域を切り出す（２画素混合時にはインターレースずれが生じないので垂直補間回路での重心補正は行わない）。更に、画角変化指示スイッチ１８により画角変化が指示された時には、垂直方向の混合画素数を４画素とし、通常の状態に戻す。

【００５１】

以上の動作により、図９に示すように撮像素子受光面上の切り出し領域を（Ａ）垂直９６０×水平１２８０、（Ｂ）垂直７２０×水平９６０、（Ｃ）垂直４８０×水平６４０の３種類に変化させる事ができ、すなわち、撮影画角を３種類に変化させる事ができる。４画素混合時の領域Ａを基準とすると、３画素混合時の領域Ｂでは１．３３倍、２画素混合時の領域Ｃでは２倍に拡大した画像を得る事ができる。ここで、３種類の領域の読み出しに際しては、画素混合数を変える事によって、常に、撮像素子からの有効出力ライン数をテレビジョン方式の有効走査線数に一致させているため、少ない出力ライン数から補間処理によって有効走査線数の信号を生成する通常のいわゆる電子ズームと比較して、垂直方向の画質劣化の無い良好な画像を保ったまま、画角を変化させる事ができる。なお、静止画モニタリング時においても画素混合数を変化させて切り出し画角を変化させる同様の動作を行っても良い。

【００５２】

以上説明したように、本実施形態では、上述の実施形態によって得られる効果のほか、静止画に対しても十分な画素数をもつ多画素の撮像素子を用い、かつ画素混合数を変化させる事によって、画質劣化の少ない画角変化を実現する事ができる。

【００５３】

また、混合の画素周期が変化したときに生じる信号レベルの変化を利得調整手段で吸収することにより、後段の信号処理手段の入力信号レベルを一定に保つことができる。

【００５４】

なお、本実施形態においては、画角変化指示スイッチによって間欠的に画角変化を行ったが、ズームスイッチによって連続的に変化させても良い。この時には、倍率変化が画素混合を変化させた時の倍率まで達しない間は通常の補間処理による電子ズームを行う事とする。本実施形態の場合には１倍以上１．３３倍未満の間は４画素混合、１．３３倍以上２倍未満の関は３画素混合、２倍以上では２画素混合となる。また、この時に光学ズーム機構と連動させても良い。

【００５５】

また、本実施形態においても前記実施形態の場合と同様に、撮像素子の画素数、撮像素子の構造、テレビジョン方式等にかかわらず、フィールド有効走査線数Ｍの３倍以上の任意の垂直画素数Ｎをもち、かつ、ＮをＭで除した商の整数部以下の整数の内少なくとも二つ整数周期での垂直方向の混合または間引きを行うことのできる撮像素子を用いる事により、本実施形態と要旨を同一にする種々の構成を取る事ができる。

【００５６】

次に本発明による他の実施形態について説明する。ここで説明する実施形態の全体構成は、図１に示す構成図と同一であるが、撮像素子３の内部構成が異なっている。本実施形態における、撮像素子の構成を図１０に示す。図１０において、３０はフォトダイオードで構成されている画素であり、水平、垂直方向に格子状に配置されており、これらの画素にはそれぞれ黄色（Ｙｅ），緑（Ｇ），シアン（Ｃｙ）の各色を透過する色フィルターが縦ストライプ状に配されている。

【００５７】

本実施形態においては垂直方向に８６４画素、水平方向に１１５２画素が配置されているものとする。垂直転送部３２は、Ｖ１，Ｖ２，Ｖ３、Ｖ４、Ｖ５，Ｖ６の６相のパルスで駆動されるＣＣＤであり、１画素あたり２相パルスに対応す

る２ゲート構成となっており、３画素周期で６相パルスに対応する６ゲートが繰り返すように構成されている。画素の電荷を垂直転送部３２に転送するための転送ゲート３１は、垂直転送部３２のＶ１、Ｖ３、Ｖ５の各パルスに対応するゲートと共通化されており、共通化されたゲートに対して印加するパルスの波高値によって画素からの電荷を垂直転送部に転送する動作と、垂直方向への転送動作とが区別して行われる。

【００５８】

水平転送部３３は、垂直転送部３２から転送された電荷を水平方向に転送し、出力アンプ３４を介して順次出力端子から出力する。本撮像素子は、前記実施形態における撮像素子とは異なり、全画素を独立した状態で垂直転送を行う事はできないが、垂直方向に隣接する３画素の信号電荷を垂直転送部内で混合した後に転送する事ができる。

【００５９】

まず、本実施形態における動画撮影モード時の動作について説明する。本実施形態における撮像素子の垂直方向の有効画素数は８６４であるため、垂直方向に３画素の混合を行うと垂直８６４画素の内、７２０（＝２４０×３）画素分の領域の信号を有効な信号として用い、残りの１４４（＝８６４－７２０）画素分の領域を手振れ補正領域とする事ができる。

【００６０】

図１１は本動作モードにおける図１０の撮像素子の垂直駆動パルスのタイミングを示した図であり、Ｖ１，Ｖ２，Ｖ３，Ｖ４，Ｖ５，Ｖ６は前記垂直転送部３２であるＣＣＤの各ゲートに入力される６相の駆動パルスである。図１１において、垂直帰線期間に含まれる期間Ｔ１において駆動パルスＶ１，Ｖ３およびＶ５をハイレベルの電圧とすることによって各画素に蓄積された信号電荷は垂直ＣＣＤのＶ１，Ｖ３およびＶ５ゲート下に各々転送される。その後Ｖ２およびＶ４パルスをローレベルからミドルレベルに変化させる事によって隣接３画素分の電荷を混合し、混合後Ｖ５パルスをミドルレベルからローレベルに変化させる事によって、混合された電荷はＶ１，Ｖ２，Ｖ３，Ｖ４ゲート下に保持される。

【００６１】

次に、Ｔ２で示す期間における一連の動作（駆動パルスをＶ１、Ｖ２、Ｖ３、Ｖ４、Ｖ５，Ｖ６の順にミドルレベルからローレベルあるいはローレベルからミドルレベルに変化させる）によって、信号電荷は混合後の一行分（３画素分）転送されて再びＶ１，Ｖ２，Ｖ３，Ｖ４ゲート下に保持される。この一連の動作を繰り返すことによって、混合された信号電荷を任意の行数分転送することができる。

【００６２】

図１１において、垂直有効走査期間の前の垂直帰線期間に含まれる期間Ｔ３および垂直有効走査期間の後の垂直帰線期間に含まれる期間Ｔ４において、合わせて１４４回上記一行分の転送動作を繰り返すことによって出画に用いない１４４行分の信号電荷を垂直帰線期間中に高速に水平転送部３３に転送する。その後の垂直帰線期間内の期間Ｔ５及びＴ６にに水平転送部３３をそれぞれ一定期間駆動することによって水平転送部に転送された電荷は出力端から出力される。

【００６３】

次に、図１１の垂直有効走査期間では、各水平帰線期間に上記一行分の転送動作を行い、その後水平有効走査期間に水平転送部を駆動して水平転送部３３の信号電荷を読み出すことによって、３画素分混合された信号電荷をテレビジョン方式に同期して読み出す事ができる。また、図１１に示すように、Ａフィールドでは信号を画素から垂直転送部３２に転送した後Ｖ２，Ｖ４パルスをミドルレベルにして混合を行うのに対して、ＢフィールドではＶ２，Ｖ６パルスをミドルレベルにして混合を行う。これによって、フィールド毎に混合する画素の組み合わせを変えてインターレース走査を実現する事ができる。撮像素子の出力信号は前記実施形態と同様に処理される。ここで、垂直補間回路８では前記実施形態の３画素混合の場合と同様に重心補正の処理がなされ、水平補間回路９ではテレビジョン方式と縦横比を一致させる補間がなされる。

【００６４】

次に、静止画撮影モードのモニタリング時の動作について説明する。静止画撮影時には前記実施形態と同様に撮像素子の全有効画素数を用いて撮影を行うもの

とする。本実施形態の撮像素子の垂直方向の画素数は８６４画素であり、動画撮影時と同様に３画素混合を行った場合には、出力ライン数が２８８（＝８６４／３）ラインとなりテレビジョン方式に同期して信号を読み出す事ができないため、静止画撮影モードのモニタリング時には、垂直方向６画素の混合を行うものとする。６画素の混合は、垂直転送部内で３画素混合された信号電荷を各水平帰線期間内に２ライン数分水平転送部に転送する事によって行う事ができる。６画素混合を行うと撮像素子からの出力ライン数を１４４（＝８６４／６）ラインに減少する事ができる。１４４ラインに減少された撮像素子の出力信号を垂直補間回路８で補間処理によって２４０ラインの信号に変換することにより、テレビジョン方式に同期した信号を得る事ができる。ここで、１４４ラインの信号から２４０ラインの信号を生成する為には、３ラインから５ラインを生成する補間処理を行えば良い（１４４／２４０＝３／５）。

【００６５】

図１２に隣接２ラインの信号を用いて補間を行う場合について示す。撮像素子の３ラインの出力信号をｎ，ｎ＋１，ｎ＋２とすると、以下の演算によって５ラインの信号を生成する事ができる。

【００６６】

ｎ’＝ｎ

ｎ’＋１＝ｎ／２＋（ｎ＋１）／２

ｎ’＋２＝ｎ＋１

ｎ’＋３＝（ｎ＋１）／２＋（ｎ＋２）／２

ｎ’＋４＝ｎ＋２

尚、３ライン以上の複数ラインの信号を用いた補間処理を行う事もできる。以上により、静止画撮影モードでのモニタリング時にも、撮像素子の全画素領域の信号から、テレビジョン信号を生成する事ができる。

【００６７】

次に、記録ボタン１５によって記録の指示がなされた場合について説明する。記録する際には高精細な信号を得るために混合処理を行わずに、全画素の信号を独立で読み出す必要がある。これを実現するためには、まず絞り２を閉じ、次に

図１１に示したパルスタイミング図のＴ２期間において、Ｖ１パルスのみをハイレベルとしＶ１ゲートに隣接した画素の信号電荷のみを垂直転送部に転送し、その後垂直転送部、水平転送部を順次駆動して信号電荷を読み出す。同様にＶ３パルスをハイレベルとしてＶ３ゲートに隣接した画素の信号電荷を読み出し、最後にＶ５パルスをハイレベルとしてＶ５ゲートに隣接した画素の信号電荷を読み出す。以上により、全画素の電荷を３回に分けて独立に読み出す事ができる。読み出された信号電荷は、記録部１０に記録されるが、その際、撮像素子の受光面上での画素配列を再現するように適宜並べ替えを行う。

【００６８】

以上説明したように、本実施形態では、垂直方向の画素数がテレビジョン方式における走査線数の整数倍でない場合でも、画素混合および垂直方向の補間処理により全有効画素領域の信号からテレビジョン方式に準拠した信号の生成が可能である。

【００６９】

なお、本実施形態においても前記実施形態の場合と同様に、撮像素子の画素数、撮像素子の構造、テレビジョン方式等にかかわらず、フィールド有効走査線数Ｍの３倍以上の任意の垂直画素数Ｎをもち、かつ、ＮをＭで除した商の整数部より一つ以上大きい整数周期での垂直方向の混合または間引きを行うことのできる撮像素子を用いる事により、本実施形態と要旨を同一にする種々の構成を取る事ができる。

【００７０】

次に、本発明による他の実施形態について説明する。ここで説明する実施形態は、上述の各実施形態において撮像素子の色フィルタ配列を異ならせたものである。図１３に本実施形態における色フィルター配列を示す。いずれも縦ストライプ状に配置したものであり垂直方向の混合または間引きの周期にかかわらず一つの出力ラインの信号からＲ，Ｇ，Ｂの各原色信号を生成できる。図１３（ａ）は前述の実施形態の撮像素子の色フィルター配列に対して，緑（Ｇ）の代わりに白（Ｗ＝全色透過）フィルターを配したものであり、Ｒ，Ｇ，Ｂ信号は以下の演算によって得る事ができる。

【００７１】

Ｒ＝Ｗ－Ｃｙ

Ｇ＝Ｙｅ＋Ｃｙ－Ｗ

Ｂ＝Ｗ－Ｙｅ

本色フィルター配列を用いた場合には、前述の実施例の色フィルター配列を用いた場合に比べてより高感度化が可能である。また、図１３（ｂ）は、補色の代わりに原色Ｒ，Ｇ，Ｂを透過する色フィルターを配したものであり、原色信号Ｒ，Ｇ，Ｂを直接得る事ができる。本色フィルター配列を用いた場合には、色純度、色Ｓ／Ｎの良好な撮像装置を得る事ができる。

【００７２】

以上説明したような色フィルター配列とすることにより、いかなる画素周期で垂直方向の混合または間引きを行っても、常に各ラインの信号から３種類の色フィルターに対応する色信号を得ることができるため、容易にテレビジョン方式の色信号を生成することが可能である。

【００７３】

【発明の効果】

以上説明したように、本発明によれば、垂直方向の画素数に上限がなくなるため、静止画に対しても十分な画素数をもつ多画素の撮像素子を用いて、高精細な静止画に加えて、良好な動画撮影を可能とした撮像装置を提供することができる。

【図面の簡単な説明】

【図１】

図１は、本発明による撮像装置の一実施形態の構成を示す構成図である。

【図２】

図２は、本発明による撮像装置の一実施形態における撮像素子の構成図である。

【図３】

図３は、本発明による撮像装置の一実施形態における駆動パルスタイミング図である。

【図４】

図４は、本発明による撮像装置の一実施形態における混合動作を説明する図である。

【図５】

図５は、本発明による撮像装置の一実施形態における読み出し領域を説明する図である。

【図６】

図６は、本発明による撮像装置の一実施形態における混合動作を説明する図である。

【図７】

図７は、本発明による撮像装置の一実施形態の構成を示す構成図である。

【図８】

図８は、本発明による撮像装置の一実施形態における混合動作を説明する図である。

【図９】

図９は、本発明による撮像装置の一実施形態における読み出し領域を説明する図である。

【図１０】

図１０は、本発明による撮像装置の一実施形態における撮像素子の構成図である。

【図１１】

図１１は、本発明による撮像装置の一実施形態における駆動パルスタイミング図である。

【図１２】

図１２は、本発明による撮像装置の一実施形態における補間動作を説明する図である。

【図１３】

図１３は、本発明による撮像装置の一実施形態における撮像素子の色フィルター配列を示す図である。

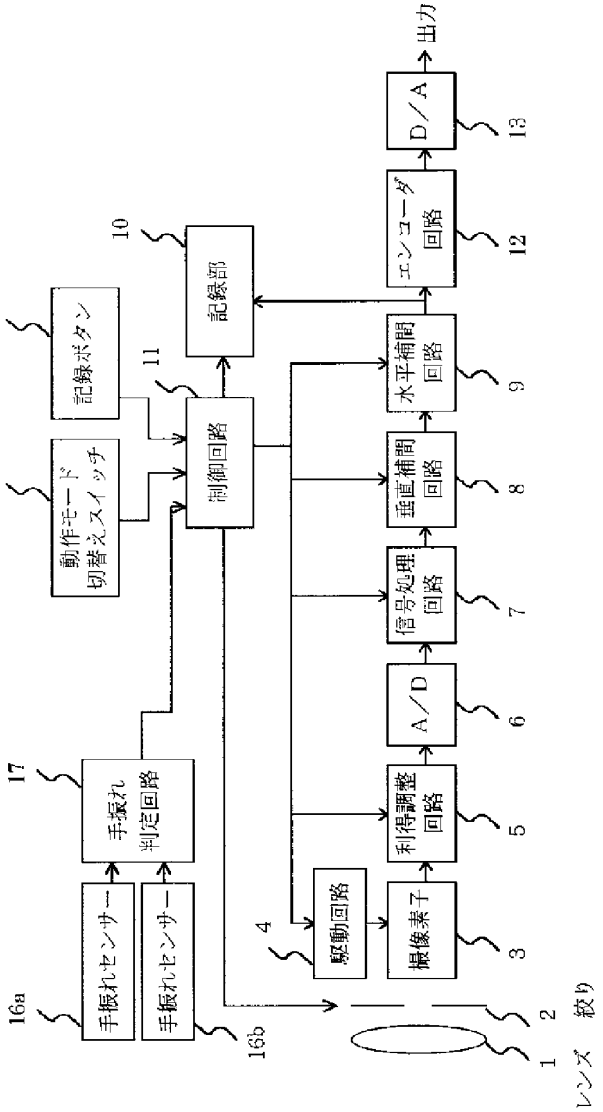
【符号の説明】

１…レンズ、２…絞り、３…撮像素子、４…駆動回路、５…利得調整回路、６…Ａ／Ｄ変換回路、７…信号処理回路、８…垂直補間回路、９…水平補間回路、１０…記録部、１１…制御回路、１２…エンコーダ回路、１３…Ｄ／Ａ変換回路、１４…モード切り替えスイッチ、１５…記録ボタン、１６ａ，１６ｂ…手振れセンサー、１７…手振れ判定回路、１８…画角変化指示スイッチ。

【書類名】　図面

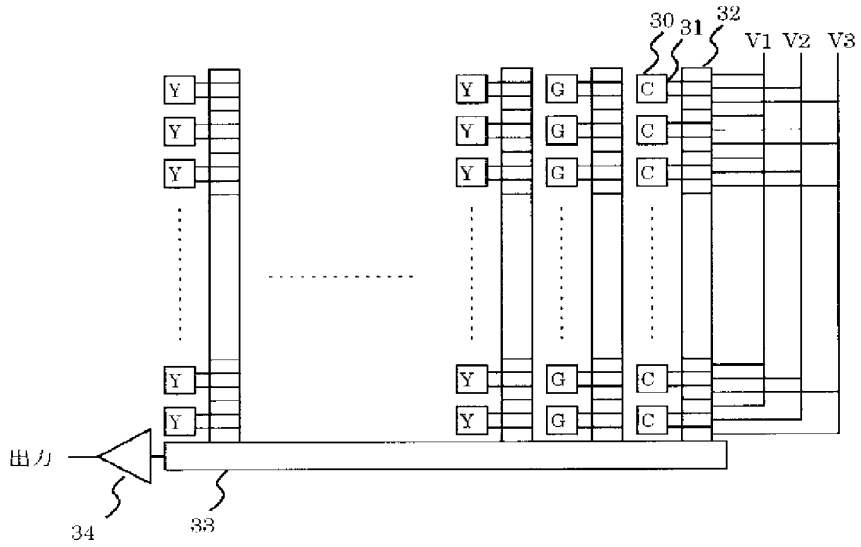
【図１】

【図１】


出力
D／A
エンコーダ回路
水平補間回路
垂直補間回路
信号処理回路
A／D
利得調整回路
撮像素子
駆動回路
手振れ判定回路
手振れセンサー
手振れセンサー
動作モード切替えスイッチ
記録ボタン
制御回路
記録部
絞り
レンズ
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16a
16b
17

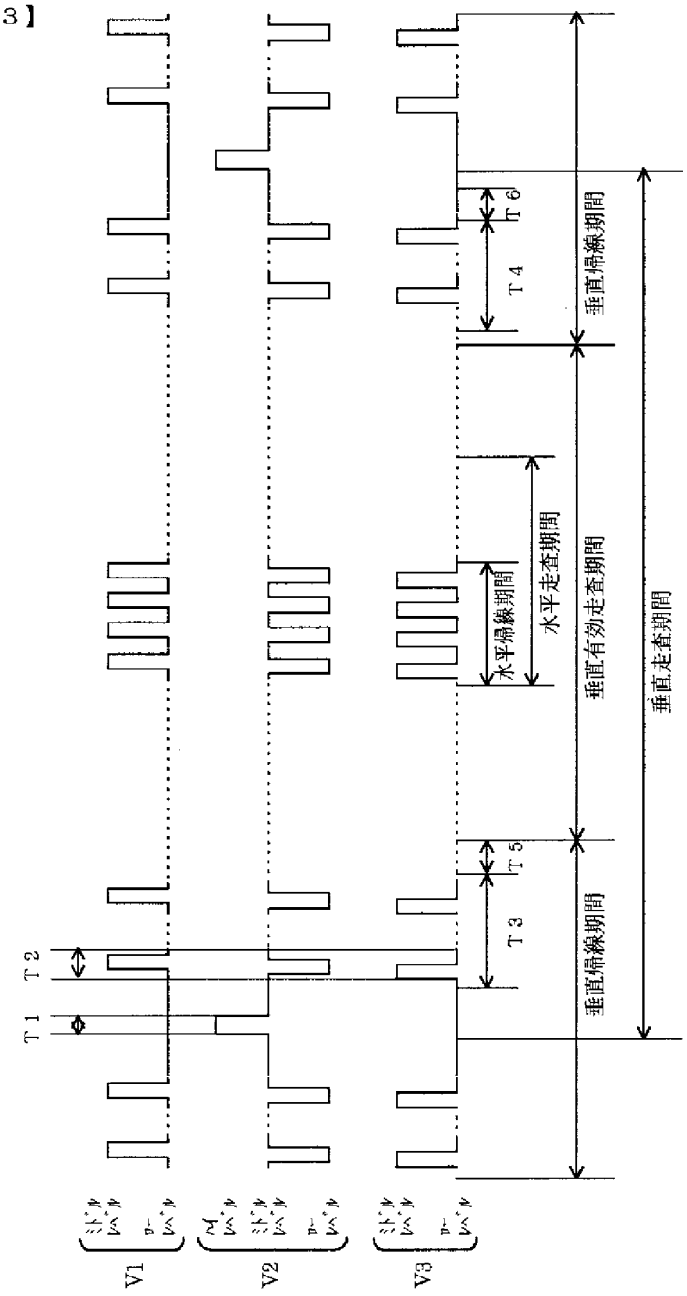
【図２】

【図２】



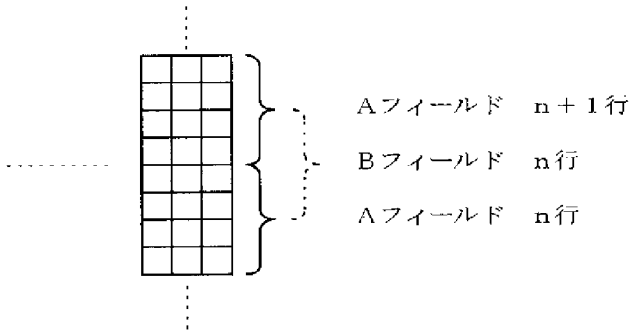
【図３】

【図３】


T1
T2
T3
T4
T5
T6
水平帰線期間
水平走査期間
垂直帰線期間
垂直有効走査期間
垂直走査期間
V1
V2
V3

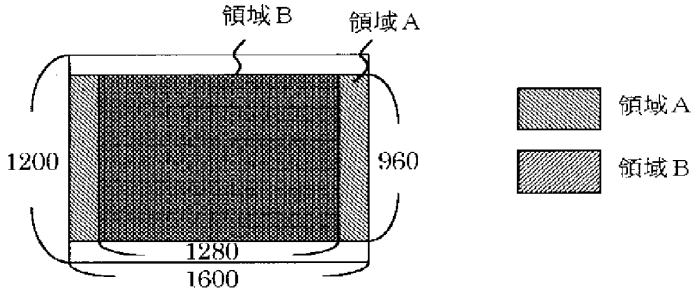
【図４】

【図４】


Ａフィールド　ｎ＋１行
Ｂフィールド　ｎ行
Ａフィールド　ｎ行

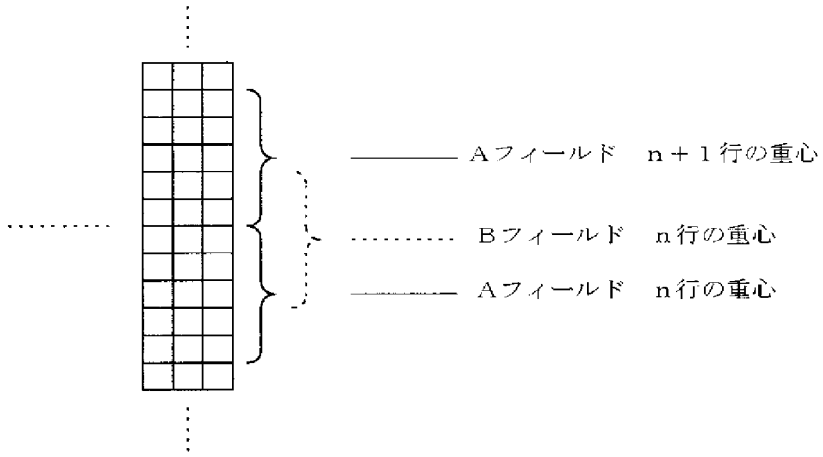
【図５】

【図５】


領域Ｂ
領域Ａ
1200
960
1280
1600
領域Ａ
領域Ｂ

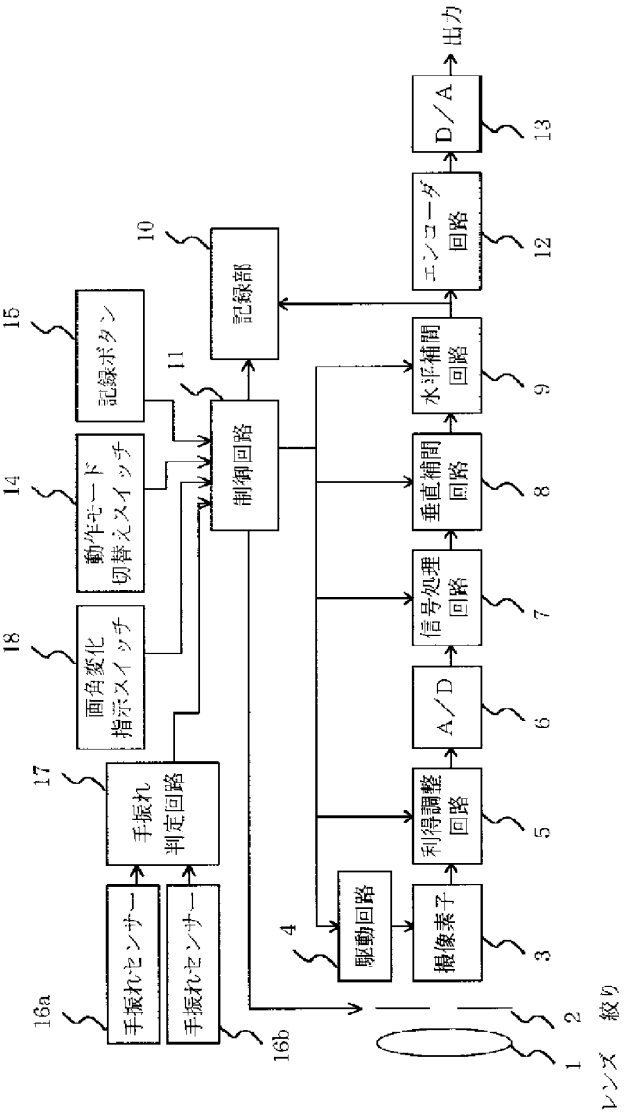
【図６】

【図６】



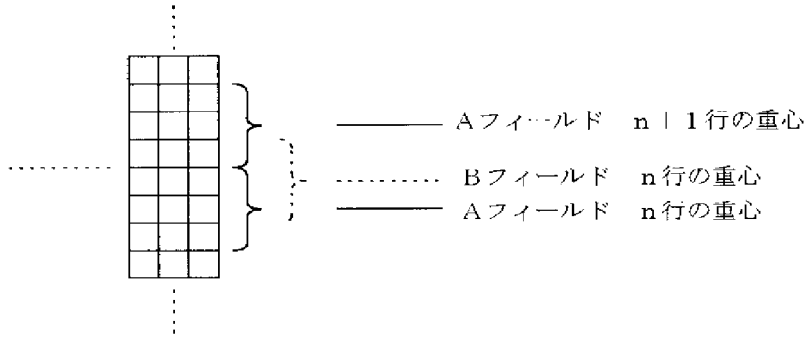
【図７】

【図７】


レンズ
絞り
撮像素子
駆動回路
利得調整回路
A／D
信号処理回路
垂直補間回路
水平補間回路
エンコーダ回路
D／A
出力
記録部
制御回路
動作モード切替えスイッチ
記録ボタン
画角変化指示スイッチ
手振れ判定回路
手振れセンサー
手振れセンサー
1
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16a
16b
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18

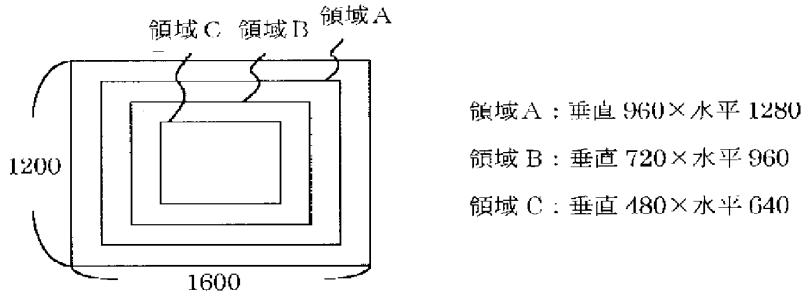
【図８】

【図８】


Aフィールド　n－1行の重心
Bフィールド　n行の重心
Aフィールド　n行の重心

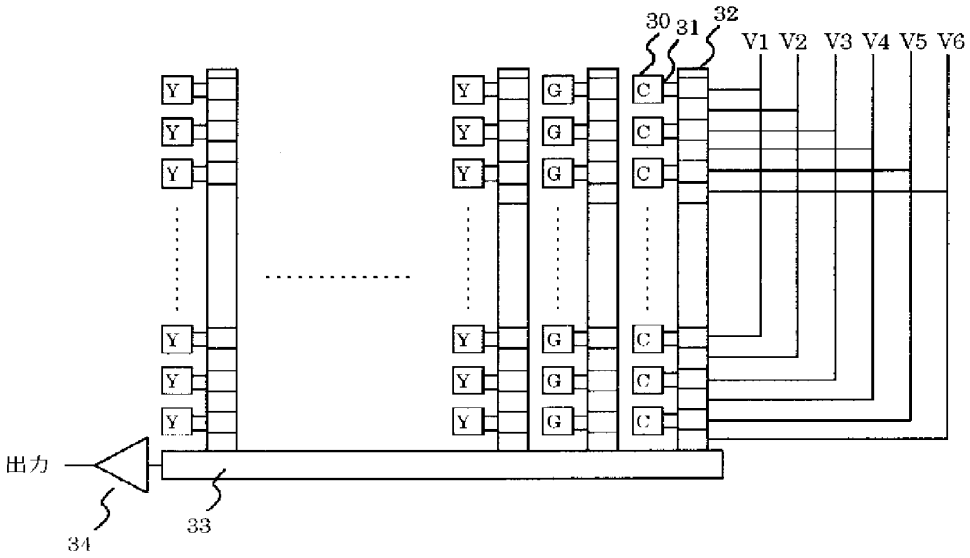
【図９】

【図９】

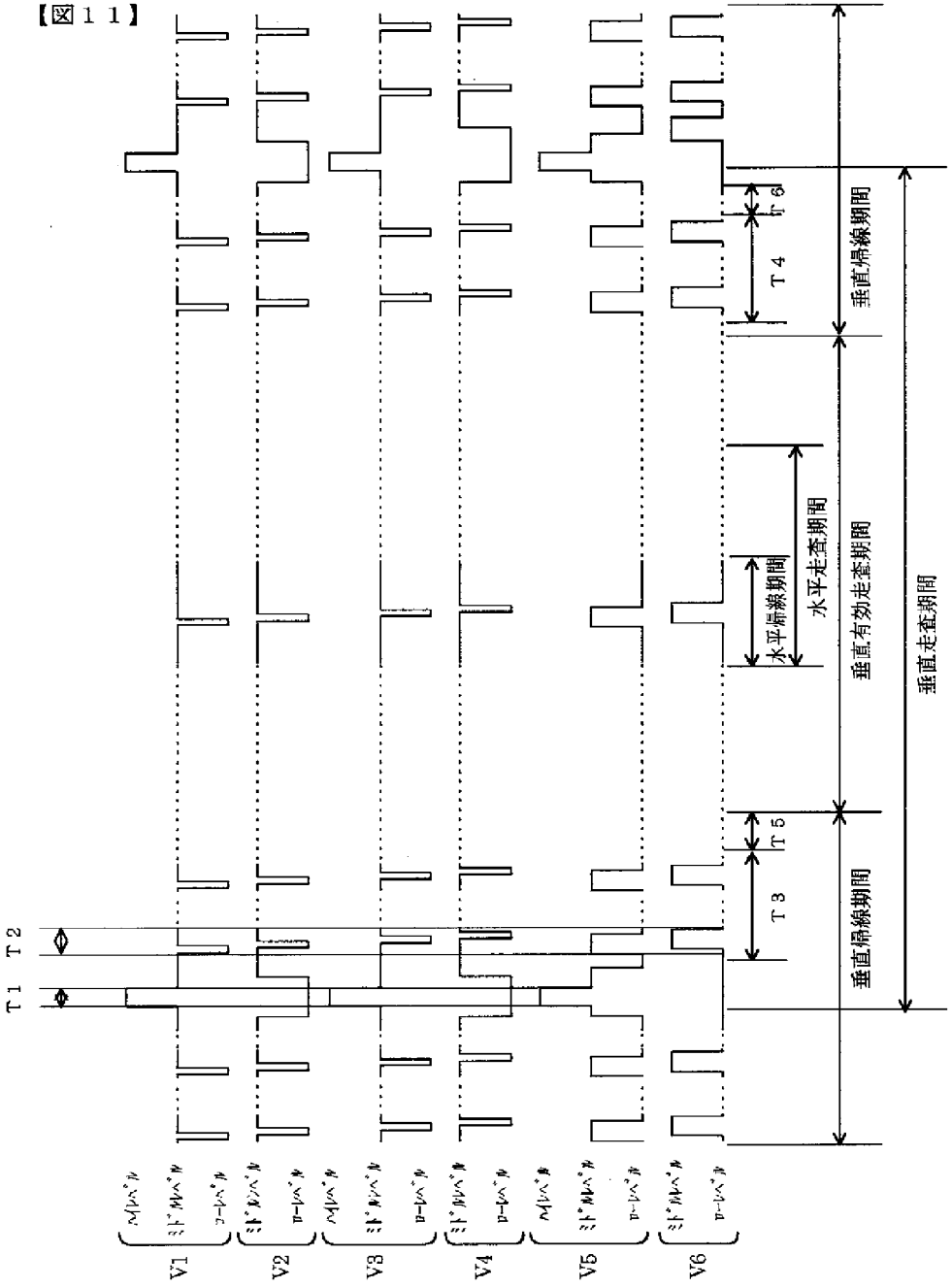

領域C
領域B
領域A
1200
1600
領域A：垂直960×水平1280
領域B：垂直720×水平960
領域C：垂直480×水平640

【図１０】

【図１０】

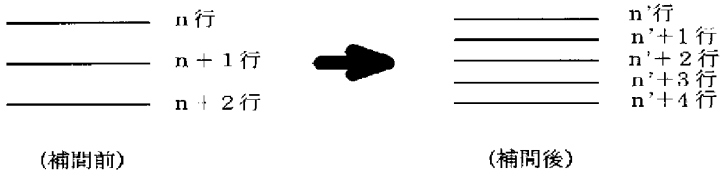


【図１１】


【図１１】
T1
T2
V1
V2
V3
V4
V5
V6
T3
T4
T5
T6
垂直帰線期間
水平帰線期間
水平走査期間
垂直有効走査期間
垂直走査期間

【図１２】

【図１２】



【図１３】

【図１３】

Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy
Ye	W	Cy

（a）

R	G	B
R	G	B
R	G	B
R	G	B
R	G	B

（b）

【書類名】　要約書

【要約】

【課題】

静止画撮影に対して十分な画素数を持つ多画素の撮像素子を用いて良好な動画撮影および静止画撮影中のモニタリングを可能とすることを目的とする。

【解決手段】

テレビジョン方式の有効走査線数の３倍以上の任意の垂直方向の画素数を持つ撮像素子を用いて、動画撮影時および静止画撮影中のモニタリング時には、画素混合または間引き、垂直帰線期間中の信号読み出し、補間処理によりテレビジョン信号を生成し、静止画記録時には全画素の信号を独立に読み出して記録する。

【選択図】　図１

【書類名】　手続補正書
【あて先】　特許庁長官　殿
【事件の表示】
　【出願番号】　特願2000-　6064
【補正をする者】
　【識別番号】　000005108
　【氏名又は名称】　株式会社日立製作所
【代理人】
　【識別番号】　100100310
　【弁理士】
　【氏名又は名称】　井上　学
【発送番号】　366136
【手続補正1】
　【補正対象書類名】　明細書
　【補正対象項目名】　特許請求の範囲
　【補正方法】　変更
　【補正の内容】
【特許請求の範囲】
　【請求項１】
　テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、
　該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Ｍに相当するライン数の出力信号を得るように該撮像素子を駆動する駆動手段と、
　前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段と、
　該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、
　を備え、
　該駆動手段は、静止画モニタ時の画像信号を該表示手段が表示する場合には、Ｋ１画素周期で垂直方向に混合または間引きを行い、動画時の画像信号を該表示手段が表示する場合には、Ｋ２画素周期で垂直方向に混合または間引きを行うことを特徴とする撮像装置。
　【請求項２】
　前記駆動手段は、前記撮像素子の垂直方向の画素数Ｎから前記混合または間引き周期Ｋと前記有効走査線数Ｍとの積Ｋ・Ｍを減じた数の垂直画素に対応する画素領域の信号電荷を前記テレビジョン方式の垂直帰線期間内に読み出しまたは掃き捨てることにより、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の画素の内Ｋ・Ｍの垂直画素に相当する画素領域の信号電荷を切り出して、前記有効走査線数Ｍに相当するライン数の出力信号を得るように前記撮像素子を駆動することを特徴とする請求項１記載の撮像装置。
　【請求項３】
　前記信号処理手段は、該撮像素子の該受光面の内、該切り出した垂直領域に対して該テレビジョン方式の縦横比と略等しくなる水平領域部分に相当する出力信号期間のみを切り出して該テレビジョン方式の有効水平走査期間全体にわたって出力する機能を有することを特徴とする請求項１または２記載の撮像装置。
　【請求項４】
　前記駆動手段は、該テレビジョン方式の表示周期毎に該混合または間引きの画素位置をずらすことによりインターレース信号を出力するように該撮像素子を駆動することを特徴とする請求項１～３のいずれか１項に記載の撮像装置。

【請求項５】
前記信号処理手段は、該混合または間引きによって得られるインターレース出力信号の垂直方向の重心位置が表示周期毎に１８０度の位相差となるように補間する機能を有することを特徴とする請求項４記載の撮像装置。
【請求項６】
前記撮像素子の該駆動手段は、装置内部または外部に設けたズームスイッチ等の画角変化を指示するスイッチ手段からの入力情報に対応して、該混合または間引きの画素周期を変化させることを特徴とする請求項１ないし５のいずれかに記載の撮像装置。
【請求項７】
前記撮像素子の出力信号の利得を調整する利得調整手段を有し、該撮像素子の混合の画素周期が変化した時にも、該利得調整手段の出力信号レベルが同一になるように、混合画素周期に対応して該利得調整手段の利得を変化させることを特徴とする請求項１ないし６のいずれかに記載の撮像装置。
【請求項８】
前記撮像装置の手振れを検出する手振れ検出手段を有し、該手振れ検出手段で検出した手振れ量に応じて、該受光面内における垂直方向及び水平方向の切り出し位置を、該手振れを補正するように変化させることを特徴とする請求項１～７のいずれか１項に記載の撮像装置。
【請求項９】
テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、
該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部より大きな整数であるところのＫ画素周期で、垂直方向に混合または間引きを行い、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数ＮのＫ分の一のライン数の出力信号を得るように前記撮像素子を駆動する駆動手段と、
前記撮像素子の出力信号を用いて画像信号を生成する機能を有する信号処理手段と、
該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、
を備え、
該駆動手段は、第１の画像信号を該表示手段が表示する場合には、Ｋ１画素周期で垂直方向に混合または間引きを行い、第２の画像信号を該表示手段が表示する場合には、Ｋ２画素周期で垂直方向に混合または間引きを行うことを特徴とする撮像装置。
【請求項１０】
テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、
該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Ｍに相当するライン数の出力信号を得るように該撮像素子を駆動する第１の駆動手段と、
該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部より大きな整数であるところのＫ画素周期で、垂直方向に混合または間引きを行い、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数ＮのＫ分の一のライン数の出力信号を得るように前記撮像素子を駆動する第２の駆動手段と、
前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段と、
該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、

を備え、
前記第１の駆動手段は、第１の画像信号を該表示手段が表示する場合には、Ｋ１画素周期で垂直方向に混合または間引きを行い、第２の画像信号を該表示手段が表示する場合には、Ｋ２画素周期で垂直方向に混合または間引きを行い、
前記第１の駆動手段による駆動と前記第２の駆動手段による駆動とを、装置内部または外部に設けたスイッチ手段からの入力情報に対応して選択、切り替えを行うことを特徴とする撮像装置。
【請求項１１】
シャッターボタン等のトリガー手段を有し、該トリガー手段によりトリガーが発生した時には、該撮像素子の各画素に蓄積した信号電荷を混合せずに全画素独立で読み出すことを特徴とする請求項１～１０のいずれか１項に記載の撮像装置。
【請求項１２】
前記第一、第二、および第三の各色は各々黄色、緑、シアンであることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。
【請求項１３】
前記第一、第二、および第三の各色は各々黄色、白色、シアンであることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。
【請求項１４】
前記第一、第二、および第三の各色は各々赤、緑、青であることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。
【請求項１５】
請求項１ないし１４のいずれかにおいて、
前記Ｋ１は前記Ｋ２よりも小さい値であることを特徴とする撮像装置。

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【あて先】　特許庁長官　殿
【事件の表示】
　【出願番号】　特願2000-　6064
【補正をする者】
　【識別番号】　000005108
　【氏名又は名称】　株式会社日立製作所
【代理人】
　【識別番号】　100100310
　【弁理士】
　【氏名又は名称】　井上　学
【発送番号】　156904
【手続補正1】
　【補正対象書類名】　明細書
　【補正対象項目名】　特許請求の範囲
　【補正方法】　変更
　【補正の内容】
【特許請求の範囲】
　【請求項１】
　テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、
　該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ１画素周期で、垂直方向に混合または間引きを行い、または、該画素配列の各画素に蓄積された信号電荷の一部を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ２（Ｋ１＞Ｋ２）画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Ｍに相当するライン数の出力信号を得るように該撮像素子を駆動し、または、該画素配列の各画素に蓄積された信号電荷を混合または間引きを行わないで該撮像素子を駆動する駆動手段と、
　前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段と、
　該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、
　を備え、
　該駆動手段は、静止画モニタ時の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷をＫ１画素周期で垂直方向に混合または間引きを行い、動画時の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷の一部をＫ２画素周期で垂直方向に混合または間引きを行い、静止画を撮像する場合には、混合または間引きを行わないことを特徴とする撮像装置。
　【請求項２】
　前記駆動手段は、前記撮像素子の垂直方向の画素数Ｎから前記混合または間引き周期Ｋと前記有効走査線数Ｍとの積Ｋ・Ｍを減じた数の垂直画素に対応する画素領域の信号電荷を前記テレビジョン方式の垂直帰線期間内に読み出しまたは掃き捨てることにより、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の画素の内Ｋ・Ｍの垂直画素に相当する画素領域の信号電荷を切り出して、前記有効走査線数Ｍに相当するライン数の出力信号を得るように前記撮像素子を駆動することを特徴とする請求項１記載の撮像装置。
　【請求項３】
　前記信号処理手段は、該撮像素子の該受光面の内、該切り出した垂直領域に対して該テレビジョン方式の縦横比と略等しくなる水平領域部分に相当する出力信号期間のみを切り

出して該テレビジョン方式の有効水平走査期間全体にわたって出力する機能を有することを特徴とする請求項１または２記載の撮像装置。

【請求項４】

前記駆動手段は、該テレビジョン方式の表示周期毎に該混合または間引きの画素位置をずらすことによりインターレース信号を出力するように該撮像素子を駆動することを特徴とする請求項１～３のいずれか１項に記載の撮像装置。

【請求項５】

前記信号処理手段は、該混合または間引きによって得られるインターレース出力信号の垂直方向の重心位置が表示周期毎に１８０度の位相差となるように補間する機能を有することを特徴とする請求項４記載の撮像装置。

【請求項６】

前記撮像素子の該駆動手段は、装置内部または外部に設けたズームスイッチ等の画角変化を指示するスイッチ手段からの入力情報に対応して、該混合または間引きの画素周期を変化させることを特徴とする請求項１ないし５のいずれかに記載の撮像装置。

【請求項７】

前記撮像素子の出力信号の利得を調整する利得調整手段を有し、該撮像素子の混合の画素周期が変化した時にも、該利得調整手段の出力信号レベルが同一になるように、混合画素周期に対応して該利得調整手段の利得を変化させることを特徴とする請求項１ないし６のいずれかに記載の撮像装置。

【請求項８】

前記撮像装置の手振れを検出する手振れ検出手段を有し、該手振れ検出手段で検出した手振れ量に応じて、該受光面内における垂直方向及び水平方向の切り出し位置を、該手振れを補正するように変化させることを特徴とする請求項１～７のいずれか１項に記載の撮像装置。

【請求項９】

テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを三画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、

該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部より大きな整数であるところのＫ１画素周期で、垂直方向に混合または間引きを行い、または、該画素配列の各画素に蓄積された信号電荷の一部を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ２（Ｋ１＞Ｋ２）画素周期で、垂直方向に混合または間引きを行い、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数ＮのＫ分の一のライン数の出力信号を得るように前記撮像素子を駆動し、または、該画素配列の各画素に蓄積された信号電荷を混合または間引きを行わないで該撮像素子を駆動する駆動手段と、

前記撮像素子の出力信号を用いて画像信号を生成する機能を有する信号処理手段と、

該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、

を備え、

該駆動手段は、第１の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷をＫ１画素周期で垂直方向に混合または間引きを行い、第２の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷の一部をＫ２画素周期で垂直方向に混合または間引きを行い、第３の画像信号を撮像する場合には、混合または間引きを行わないことを特徴とする撮像装置。

【請求項１０】

テレビジョン方式の一表示画面の有効走査線数Ｍの３倍以上の数Ｎの画素を垂直方向に、任意の数の画素を水平方向に配した受光面であって、該受光面を構成する画素配列の各画素に対して、水平方向に第一、第二、および第三の各色を各々透過する色フィルターを

二画素周期で周期的に配し、垂直方向には同一種類の色を透過する色フィルターを配した受光面を備えた撮像素子と、
該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ１画素周期で、垂直方向に混合または間引きを行い、または、該画素配列の各画素に蓄積された信号電荷の一部を、ＮをＭで除した商の整数部またはそれ以下の整数の内少なくとも一つの整数であるところのＫ２（Ｋ１＞Ｋ２）画素周期で、垂直方向に混合または間引きを行い、前記有効走査線数Ｍに相当するライン数の出力信号を得るように該撮像素子を駆動し、または、該画素配列の各画素に蓄積された信号電荷を混合または間引きを行わないで該撮像素子を駆動する第１の駆動手段と、
該画素配列の各画素に蓄積された信号電荷を、ＮをＭで除した商の整数部より大きな整数であるところのＫ画素周期で、垂直方向に混合または間引きを行い、前記テレビジョン方式の有効垂直走査期間内に、前記撮像素子の垂直画素数ＮのＫ分の一のライン数の出力信号を得るように前記撮像素子を駆動する第２の駆動手段と、
前記撮像素子の出力信号を用いて画像信号を生成する信号処理手段と、
該画像信号を、テレビジョン方式の表示画面を備えた表示手段に出力する出力手段と、
を備え、
前記第１の駆動手段は、第１の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷をＫ１画素周期で垂直方向に混合または間引きを行い、第２の画像信号を該表示手段が表示する場合には、該画素配列の各画素に蓄積された信号電荷の一部をＫ２画素周期で垂直方向に混合または間引きを行い、第３の画像信号を撮像する場合には、混合または間引きを行わず、
前記第１の駆動手段による駆動と前記第２の駆動手段による駆動とを、装置内部または外部に設けたスイッチ手段からの入力情報に対応して選択、切り替えを行うことを特徴とする撮像装置。
【請求項１１】
シャッターボタン等のトリガー手段を有し、該トリガー手段によりトリガーが発生した時には、該撮像素子の各画素に蓄積した信号電荷を混合せずに全画素独立で読み出すことを特徴とする請求項１～１０のいずれか１項に記載の撮像装置。
【請求項１２】
前記第一、第二、および第三の各色は各々黄色、緑、シアンであることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。
【請求項１３】
前記第一、第二、および第三の各色は各々黄色、白色、シアンであることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。
【請求項１４】
前記第一、第二、および第三の各色は各々赤、緑、青であることを特徴とする請求項１ないし１１のいずれかに記載の撮像装置。

【手続補正2】
【補正対象書類名】　明細書
【補正対象項目名】　００１３
【補正方法】　変更
【補正の内容】
【００１３】
【課題を解決するための手段】
上記目的を達成するため、本発明では一例として、特許請求の範囲記載の構成を用いる。

出願人履歴

０００００５１０８

19900831

新規登録

５０８２７７８７４

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3

CONFIRMATION NO. 9653

20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
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PUBLICATION NOTICE

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Title:ELECTRIC CAMERA

Publication No.US-2010-0289907-A1
Publication Date:11/18/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

20457 7590 11/30/2010

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EXAMINER	
ART UNIT	PAPER NUMBER
2622	
MAIL DATE	DELIVERY MODE
11/30/2010	PAPER

Notice of Erroneous Early Release of Patent Application Information on November 11, 2010

On November 11, 2010, the United States Patent and Trademark Office (USPTO), unintentionally and as a result of a processing error, made available to subscribers of patent application data the patent application publications that were not scheduled to publish under 35 U.S.C. 122(b) until November 18, 2010. The USPTO's subscription service allows a member of the public to obtain copies of all patents or application publications from the USPTO on the date of grant or publication for a fee. One subscriber who had access to the early-published data made these premature patent application publications available on its free Web service, known as Free Patents Online, on November 11, 2010 - one week prior to the scheduled publication date. At the USPTO's request, the subscriber removed access to the patent application publications dated November 18, 2010 on November 15, 2010 until November 18, 2010. While the premature release of application information on November 11, 2010, is not considered a publication of such applications under 35 U.S.C. 122(b), the USPTO acknowledges that there are potential international ramifications in certain very limited circumstances such as where an applicant whose application information was released early did not file a foreign application within the Paris Convention priority period but did file in a foreign country between November 11, 2010 and November 18, 2010.

The USPTO did not post the publications on its Web site until November 18, 2010, and it did not provide access to the public Patent Application Information Retrieval (PAIR) System based on the early release of the publication data. Moreover, the USPTO did not record in its records that a publication occurred until November 18, 2010. Copies of, and access to, any of the affected applications described in this document were not provided by the USPTO under 37 CFR 1.14 based on the error described in this document. The USPTO regrets this error and is instituting controls to prevent similar processing errors in the future.

Inquiries regarding this matter may be directed to Mark Polutta, Senior Legal Advisor, Office of Patent Legal Administration at (571) 272-7709 or via email addressed to mark.polutta@uspto.gov.

M327

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

20457 7590 03/14/2012

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EXAMINER	
NGUYEN, LUONG TRUNG	
ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
03/14/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/845,266	NAKANO ET AL.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *28 July 2010* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 07/28/2010 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

3. Claims 1-4, 9, 11-16 are objected to because of the following informalities:

Claim 1 (line 8), "a display screen" should be changed to --the display screen--.

Claim 4 (line 7), "a moving video mode" should be changed to --the moving video mode--.

Claim 9 (line 3), "a display screen" should be changed to --a display screen.--.

Claim 11 (line 10), "the static image mode" should be changed to --a static image mode--.

Claim 11 (lines 11, 12), "a static image mode" should be changed to --the static image mode--.

Claims 2-4 are objected as being dependent from claim 1.

Claims 12-16 are objected as being dependent from claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 6 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 6 recites limitation "wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines," contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 12 recites limitation "wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines," contains subject matter which was not described in the specification

in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-5, 7-11, 13-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 6, 8, 13, 14, 18, 20 of U.S. Patent No. 6,765,616. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Claim 1 of the instant application is anticipated by patent claims 1 and 6 in that patent claims 1 and 6 contain all the limitations of claim 1 of the instant application. Noted that patent claims 1 and 6 disclose an electronic camera and displaying images on a display screen in

moving images mode and still images mode. This indicates that the electronic camera has function of recording in a moving video mode and static image mode. Claim 1 of the instant application therefore is not patently distinct from the earlier patent claim and as such is unpatentable for obvious-type double patenting.

All the limitations of the instant application claim 2 are encompassed by the limitation of the patent claims 1 and 6.

All the limitations of the instant application claim 3 are encompassed by the limitation of the patent claims 1 and 6.

All the limitations of the instant application claim 4 are encompassed by the limitation of the patent claims 1 and 8.

Claim 1 of the instant application is anticipated by patent claims 13 and 18 in that patent claims 13 and 18 contain all the limitations of claim 1 of the instant application. Noted that patent claims 13 and 18 disclose an electronic camera and displaying images on a display screen in moving images mode and still images mode. This indicates that the electronic camera has function of recording in a moving video mode and static image mode. Claim 1 of the instant application therefore is not patently distinct from the earlier patent claim and as such is unpatentable for obvious-type double patenting.

All the limitations of the instant application claim 2 are encompassed by the limitation of the patent claims 1 and 18.

All the limitations of the instant application claim 3 are encompassed by the limitation of the patent claims 1 and 18.

All the limitations of the instant application claim 4 are encompassed by the limitation of the patent claims 1 and 20.

Regarding application claim 5, application claim 5 is rejected for the same reason given in application claim 1 as discussed above.

Regarding application claim 7, application claim 7 is rejected for the same reason given in application claim 4 as discussed above.

Regarding application claim 8, application claim 8 is rejected for the same reason given in application claim 2 as discussed above.

All the limitations of the instant application claim 9 are encompassed by the limitation of the patent claims 1 and 2.

All the limitations of the instant application claim 10 are encompassed by the limitation of the patent claims 1 and 2.

All the limitations of the instant application claim 9 are encompassed by the limitation of the patent claims 13 and 14.

All the limitations of the instant application claim 10 are encompassed by the limitation of the patent claims 13 and 14.

Instant application claims 11, 13-16 are method claims of instant application apparatus claims 5, 7-10, respectively. Therefore, instant application claims 11, 13-16 are rejected for the same reason given in instant application apparatus claims 5, 7-10, respectively.

8. Claims 6, 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6, 13, 18 of U.S. Patent No. 6,765,616 in view of Hijishiri et al. (US 6,906,746).

Regarding instant application claims 6, 12. Patent claims 1 and 6 fail to disclose wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines.

However, Hijishiri et al. discloses a digital camera in which when in a display movie image (figure 2, step 22), image data in a cropping area as shown in figures 2, 4, step 26) is stored in image memory, column 6, lines 12-65. Therefore, it would have been obvious to ordinary skill in the art at the time the invention was made to modify the device in Patent claims 1 and 6 in order to increase the number of image data stored in image memory.

Regarding instant application claims 6, 12. Patent claims 13 and 18 fail to disclose wherein when recording an image in the moving video mode, the pixel lines do not include one or more pixel lines at a top and/or bottom of the sensor, and the portion of the pixel lines used does not include one or more pixels at a left extreme and/or right extreme of the pixel lines.

However, Hijishiri et al. discloses a digital camera in which when in a display movie image (figure 2, step 22), image data in a cropping area as shown in figures 2, 4, step 26) is stored in image memory, column 6, lines 12-65. Therefore, it would have been obvious to ordinary skill in the art at the time the invention was made to modify the device in Patent claims 13 and 18 in order to increase the number of image data stored in image memory.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Udagawa (US 6,519,000) discloses image pickup apparatus with mode switching between a still picture mode and a moving picture mode.

Iizuka (US 5,847,758) discloses color CCD solid-state image pickup device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571)272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUONG T NGUYEN/
Primary Examiner, Art Unit 2622
03/10/12

Notice of References Cited	Application/Control No. 12/845,266	Applicant(s)/Patent Under Reexamination NAKANO ET AL.	
	Examiner LUONG T. NGUYEN	Art Unit 2622	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,765,616	07-2004	Nakano et al.	348/322
*	B	US-6,906,746	06-2005	Hijishiri et al.	348/240.2
*	C	US-6,519,000	02-2003	Udagawa, Yoshirou	348/220.1
*	D	US-5,847,758	12-1998	Iizuka, Tetsuya	348/317
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	Art Unit
	LUONG T NGUYEN	2622

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
348/220.1, 222.1, 294, 322, 311, 312, 317 (text search)	3/10/2012	LTN
EAST (USPAT; USPGPUB; JPO; EPO; DERWENT; IBM_TDB)	3/10/2012	LTN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

Receipt date: 07/28/2010

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	**To be assigned**
Filing Date	**July 28, 2010**
First Named Inventor	**T. NAKANO, et al.**
Art Unit (expected)	**2622**
Examiner Name (expected)	**Luong Trung Nguyen**
Attorney Docket Number	**500.38315VC3**

U.S. PATENT DOCUMENTS

Examiner Initials'	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 6,661,451		12-2003	Kijima, et al.	
		US- 7,154,539		12-2006	Nishimura, et al.	
		US- 5.828,406		10-1998	Parulski et al.	
		US- 4,054,915		10-1977	Sugihara, Yasumasa	
		US- 5,170,249		12-1992	Ohtsubo, et al.	
		US- 5,187,569		02-1993	Tani, Nobuhiro	
		US- 7,403,226		07-2008	Nakano, et al.	
		US-6,195,125		02-2001	Udagawa et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials'	Cite No.[1]	Foreign Patent Document Country Code[3]–Number[4]–Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		JP 9-270959	10-97			
		JP 11-187306	07-99			
		JP 04-323973	11/13/1992	Hitachi, Ltd.		
		JP 11-004456	01/06/1999	Fuji Photo Film Co., Ltd.		
		JP 11-355665	12/24/1999	Fuji Photo Film Co., Ltd.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

Examiner Signature	/Luong Nguyen/	Date Considered	03/10/2012

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /LN/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	3720	348/294,322,311,312,317.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 08:42
S2	7142	vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 08:44
S3	426	S1 and S2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 08:44
S4	122	S3 and @ad <"20000111"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 08:45
S5	10	("20030122941" | "5170249" | "5343243" | "5502483" | "5668597" | "5734427" | "5786852" | "5986698" | "6148031" | "6614477").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/03/10 08:49
S6	1	12/845266	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 12:27
S7	3	10/660711	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:13
S8	2804	record$3 with (motion or movie) with mode	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:18
S9	728	348/220.1.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:19
S10	82	S8 and S9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:19

S11	4421	348/222.1.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:30
S12	52	S8 and S11	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:31
S13	27	("20010026587" | "20010031002" | "20020196778" | "20030023982" | "20030122971" | "20030174772" | "20050046900" | "20050212923" | "20070024705" | "20070258702" | "20070291167" | "20100045810" | "4339775" | "4660096" | "5170259" | "5430486" | "5442398" | "5491560" | "5677981" | "5706290" | "6243095" | "6249324" | "6404928" | "6411302" | "6563807" | "6990150" | "7415166").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/03/10 13:32
S14	3720	348/294,322,311,312,317.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:36
S15	27	S8 and S14	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:36
S16	3	(nhan near6 tran).xa. and crop$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:43
S17	10	("20010010561" | "5172234" | "5557328" | "5838370" | "5920348" | "5930528" | "6522360" | "6559888" | "6643416" | "6704048").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/03/10 13:50
S18	1966	add$3 same pixel$1 and standard same (TV or NTSC) and camera$1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:52
S19	71	S18 and (S8 or S14)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 13:53
S20	8	("4054915" | "5170249" | "5187569" | "5828406" | "6195125" | "6661451" | "7154539" | "7403226").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/03/10 13:55
S21	80	(nguyen-luong$8).xp. and record$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 14:00
S22	20	("20020015098" | "20020126211" | "20030011747" | "20040081437" |	US-PGPUB; USPAT;	OR	OFF	2012/03/10 14:01

		"5060074" | "5122881" | "5608862" | "6307590" | "6566647" | "6669099" | "6757018" | "6809766" | "6882368" | "6906746" | "6975355" | "7050142" | "7110027" | "7142237" | "7209149" | "7738010").PN.	USOCR			
S23	948	348/311.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 14:06
S24	8	S8 and S23	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/03/10 14:06

EAST Search History (Interference)

<This search history is empty>

3/10/2012 3:34:57 PM
C:\Users\lnguyen2\Documents\EAST\Workspaces\12845266.wsp

UNITED STATES PATENT AND TRADEMARK OFFICE

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BIB DATA SHEET

CONFIRMATION NO. 9653

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/845,266	07/28/2010	348	2622	500.38315VC3

APPLICANTS

Takahiro Nakano, Hitachinaka, JAPAN;
Ryuji Nishimura, Yokohama, JAPAN;
Toshiro Kinugasa, Hiratsuka, JAPAN;

**** CONTINUING DATA ***************************

This application is a CON of 10/660,710 09/12/2003 PAT 8,059,177
which is a DIV of 09/520,836 03/08/2000 PAT 6,765,616

**** FOREIGN APPLICATIONS ***************************

JAPAN 00-006064 01/11/2000

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/06/2010

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /LUONG TRUNG NGUYEN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		JAPAN	8	16	3

ADDRESS

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873
UNITED STATES

TITLE

ELECTRIC CAMERA

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	Art Unit
	LUONG T NGUYEN	2622

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/10/2012								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	NAKANO et al.
Application No.:	12/845,266
Filed:	7/28/2010
Title:	ELECTRIC CAMERA
Art Unit:	2622
Exr.:	Nguyen
CONF. No.:	**9653**

AMENDMENT

MS: AMENDMENT **July 16, 2012**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated March 14, 2012, the period of response for which extension is requested by the attached Petition for Extension of Time, please amend the present application as listed below and as set forth on the following pages:

Amendments to the Claims;

Remarks are included following the amendments.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines, wherein N is equal to or greater than three times a number of effective scanning lines M of a display screen;

a signal processing unit, that generates image signals by using the output signals of the image sensing device; and

a display unit with ~~a~~ the display screen, to display an image corresponding to the image signals;

wherein during monitoring in a static image mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K1 pixels;

wherein during recording in a moving video mode, the signal processing unit generates image signals by mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines to provide pixel lines only at pixel intervals of K2 pixels, a value of K1 being different from a value of K2; and

wherein during recording in the static image mode, the signal processing unit generates image signals by using all signal charges accumulated in the N number of vertically arranged pixel lines, to provide N pixel lines.

2. (Original) An electric camera according to the claim 1, wherein the value K1 is larger than the value K2.

3. (Original) An electric camera according to the claim 1, wherein during the moving video mode, the signal processing unit generates image signals by using the signal charges mixed or culled at pixel intervals of K2 pixels.

4. (Currently Amended) An electric camera according to the claim 3, comprising:

an image-instability detector which detects an image-instability of the electric camera;

wherein the signal processing unit generates image signals by using the part of signal charges mixed or culled at pixel intervals of K2 pixels, the part being changed according to an amount of image-instability detected by the instability detector to correct the image-instability, during ~~a~~ the moving video mode.

5. (Original) An electric camera comprising:

an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines;

a signal processing unit that generates image signals by processing the output signals of the image sensing device; and

a display unit with a display screen, that displays an image corresponding to the image signals;

wherein when recording an image in a static image mode, the signal processing unit generates image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

wherein when monitoring an image in a static image mode, the signal processing unit generates image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and

wherein when recording an image in a moving video mode, the signal processing unit generates image signals by using a portion of, or the entirety of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.

6. (Cancelled)

7. (Original) An electric camera according to the claim 5, further comprising:

an image-instability detector which detects an image-instability of the electric camera; and

wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

8. (Original) An electric camera according to the claim 5, wherein a value of the first distance is larger than a value of the second distance.

9. (Currently Amended) An electric camera according to the claim 5, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of ~~a~~ the display screen

10. (Original) An electric camera according to the claim 9, wherein the fixed parameter is equal to three.

11. (Currently Amended) A method for operating an electric camera, wherein the electric camera includes the features of

an image sensing device with a light receiving surface having an array of pixels arranged vertically and horizontally in a grid pattern with an N number of vertically arranged pixel lines,

a signal processing unit that generates image signals by processing the output signals of the image sensing device, and

a display unit with a display screen that displays an image corresponding to the image signals, the method comprising:

selecting between ~~the~~ a static image mode and a moving video mode, and when in ~~a~~ the static image mode, selecting an operation from a list including (1) recording an image in ~~a~~ the static image mode, and (2) monitoring an image in the static image mode;

upon selecting the operation of recording an image in the static image mode, using the signal processing unit to generate image signals by using all signal

charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;

upon selecting the operation of monitoring an image in the static image mode, using the signal processing unit to generate image signals by using pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines of the image sensing device to provide only pixel lines separated from one another by intervals of a given distance; and

upon selecting the operation of recording an image in the moving video mode, using the signal processing unit to generate image signals by using a portion of, or the entirety of, the N number of vertically arranged pixel lines which have been mixed or culled to provide only pixel lines separated from one another by intervals of a second distance, wherein a value of the second distance is different from a value of the first distance.

12. (Cancelled)

13. (Original) A method for operating an electric camera of claim 11,

wherein when recording in the moving video mode, in order to correct image-instability, the signal processing unit generates image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by a instability detector which detects an image-instability of the electric camera.

14. (Original) A method for operating an electric camera of claim 11, wherein the value of the first distance is larger than the value of the second distance.

15. (Original) A method for operating an electric camera of claim 11, wherein N is equal to or greater than a product of a fixed parameter multiplied by a number of effective scanning lines M of a display screen.

16. (Original) A method for operating an electric camera of claim 15, wherein the fixed parameter is equal to three.

REMARKS

This Amendment is filed in response to the Office Action dated March 14, 2012. In the office action, claims 1-4, 9, and 11-16 were objected to due to minor informalities. Claims 6 and 12 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Claims 1-5, 7-11, and 13-16 were rejected on the grounds of non-statutory obviousness-type double patenting over claims 1, 2, 6, 8, 13, 14, 18, and 20 of U.S. Patent 6,765,616. Claims 6 and 12 were rejected on the grounds of non-statutory obviousness-type double patenting over claims 1, 6, 8, 13, and 18 of U.S. Patent 6,765,616 in view of Hijishiri et al. (U.S. 6,906,746).

By the present amendment, claims 6 and 12 have been cancelled without prejudice or disclaimer of the subject matter thereof, without forfeiture of the right to file the claims in a continuing application, and without comment regarding the correctness or lack thereof of the rejection of said claims.

In addition, claims 1, 4, 9, and 11 have been amended to correct the minor informalities identified in the recent Office Action. No new claims have been added, and no new matter has been added. Also, a terminal disclaimer is being filed with this response. Therefore, this response places the application in condition for allowance.

At entry of this paper, claims 1-5, 7-11, and 13-16 will be pending for further consideration and examination in the application. All rejections are traversed, in so far as the rejections are applicable to the present claims. Reconsideration and allowance of this application, as amended, is respectfully requested.

REJECTIONS UNDER 35 USC §102

In the office action, claims 1-4, 9, and 11-16 were objected to due to minor informalities. In the present response, claims 1, 4, 9, and 11 have been amended to correct the minor informalities, in the manner recommended by the Examiner. Therefore, the objections should be withdrawn.

REJECTIONS UNDER 35 USC §112

In the office action, claims 6 and 12 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. By the present amendment, claims 6 and 12 have been cancelled without prejudice or disclaimer of the subject matter thereof, without forfeiture of the right to file the claims in a continuing application, and without comment regarding the correctness or lack thereof of the rejection of said claims. Therefore, the rejection should be withdrawn.

DOUBLE PATENTING REJECTIONS

Claims 1-5, 7-11, and 13-16 were rejected on the grounds of non-statutory obviousness-type double patenting over claims 1, 2, 6, 8, 13, 14, 18, and 20 of U.S. Patent 6,765,616. By the present amendment, a terminal disclaimer is being filed with this response, without comment regarding the correctness or lack thereof of the rejection of said claims. Therefore, the rejection should be withdrawn.

Claims 6 and 12 were rejected on the grounds of non-statutory obviousness-type double patenting over claims 1, 6, 8, 13, and 18 of U.S. Patent 6,765,616 in view of Hijishiri. By the present amendment, claims 6 and 12 have been cancelled without prejudice or disclaimer of the subject matter thereof, without forfeiture of the

right to file the claims in a continuing application, and without comment regarding the correctness or lack thereof of the rejection of said claims. Therefore, the rejection should be withdrawn.

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are now in condition for allowance.

EXAMINER INVITED TO TELEPHONE

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any Examiner's Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are now in condition for allowance.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus, LLP Deposit Account No. 01-2135 (Docket No. 500.38315VC3), and please credit any excess fees to such deposit account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP

By /Ayal I. Sharon/
Ayal I. Sharon
Registration No. 55,986

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Telephone: (703) 312-6600
Facsimile: (703) 312-6666

500.38315VC3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: T. NAKANO

Serial No.: 12/845,266

Filed: July 28, 2010

For: ELECTRIC CAMERA

Group: 2622

Examiner: Luong Trung Nguyen
Conf. No.: 9653

PETITION FOR EXTENSION OF TIME

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

July 16, 2012

Sir:

In the matter of the above-identified application, Applicants hereby respectfully petition for an extension of time to permit filing a response within the first month subsequent to expiration of the shortened statutory period set in the outstanding Office Action mailed March 14, 2012. A credit card payment form in the amount of $150.00 to cover the required fee for the requested extension of time is attached hereto.

It is respectfully requested that any shortage in the fee be charged to the account of Antonelli, Terry, Stout & Kraus, LLP, Account No. 01-2135 (500.38315VC3) and excess fees credited to account.

Respectfully submitted,

/Ayal I. Sharon /
Ayal I. Sharon
Registration No. 55,986
ANTONELLI, TERRY, STOUT & KRAUS, LLP

AIS/kmh
(703) 312-6600

PTO/SB/26 (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT	Docket Number (Optional) 500.38315VC3

In re Application of: T. NAKANO

Application No.: 12/845,266

Filed: 7/28/2010

For: ELECTRIC CAMERA

The owner* Hitachi, Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,765,616. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record.

/Paul J. Skwierawski/ 07/16/2012
Signature Date

Paul J. Skwierawski Reg. No. 32,173
Typed or printed name

(703) 312-6600
Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner). Form PTO/SB/96 may be used for making this statement. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	12845266
Filing Date:	28-Jul-2010
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Filer:	Ayal I. Sharon/Krista Hargrove
Attorney Docket Number:	500.38315VC3

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Statutory or terminal disclaimer	1814	1	160	160
		Total in USD ($)		**310**

Electronic Acknowledgement Receipt

EFS ID:	13254718
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	Ayal I. Sharon/Krista Hargrove
Filer Authorized By:	Ayal I. Sharon
Attorney Docket Number:	500.38315VC3
Receipt Date:	16-JUL-2012
Filing Date:	28-JUL-2010
Time Stamp:	07:31:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$310
RAM confirmation Number	8259
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	38315AMD.pdf	96164 aa30f78bb7f19d2f7d4027e9f219363180d7d080	no	11
Warnings:					
Information:					
2	Extension of Time	38315EOT.pdf	62499 b2c910150ce4feec2e481f4073834a4d1a299709	no	1
Warnings:					
Information:					
3	Terminal Disclaimer Filed	38315TermDis.pdf	97864 4108c303ef7e3019f9162e283c05cae0f38901ec	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	31649 492713722efd4f5623325a0d2c81667c51f3e27a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	288176		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/845,266	07/28/2010	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT	07/16/2012	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 14	Minus	** 20	= 0	X $ =		OR	X $60=	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/FELICIA R. FARMER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	12/845,266	NAKANO ET AL.	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☐ APPROVED	☒ DISAPPROVED
Date Filed : 7/16/12	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

ANDRE ROBINSON

[X] The person who signed the terminal disclaimer:

[ ] has failed to state his/her capacity to sign for the business entity. (See FP 14.28)

[ ] is not recognized as an officer of the assignee. (See FP 14.29)

[X] does not have power of attorney. (FP 14.29.01)

U.S. Patent and Trademark Office

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

20457 7590 08/06/2012

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
NGUYEN, LUONG TRUNG	
ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
08/06/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/845,266	NAKANO ET AL.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-5,7-11 and 13-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-5,7-11 and 13-16* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 07/16/2012 have been fully considered but they are not persuasive.

The attorney who signed the Terminal Disclaimer, filed on 07/16/2012, is not attorney of the record, not listed in OATH. The Terminal Disclaimer has not been accepted and has not been recorded. Therefore, the previous Double Patenting rejection is maintained.

Terminal Disclaimer

2. An attorney or agent, not of record, is not authorized to sign a terminal disclaimer in the capacity as an attorney or agent acting in a representative capacity as provided by 37 CFR 1.34 (a). See 37 CFR 1.321(b) and/or (c).

The attorney who signed the Terminal Disclaimer, filed on 07/16/2012, does not have Power of Attorney and thus is not an attorney of the record, the attorney is not listed in OATH. The Terminal Disclaimer has not been accepted and has not been recorded.

3. The assignee has not established its ownership interest in the application, in order to support the terminal disclaimer. There is no submission in the record establishing the ownership interest by either (a) providing documentary evidence of a chain of title from the original inventor(s) to the assignee and a statement affirming that the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for

recordation pursuant to 37 CFR 3.11, or (b) specifying (by reel and frame number) where such documentary evidence is recorded in the Office (37 CFR 3.73(b)).

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-5, 7-11, 13-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 6, 8, 13, 14, 18, 20 of U.S. Patent No. 6,765,616. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Claim 1 of the instant application is anticipated by patent claims 1 and 6 in that patent claims 1 and 6 contain all the limitations of claim 1 of the instant application. Noted that patent claims 1 and 6 disclose an electronic camera and displaying images on a display screen in

moving images mode and still images mode. This indicates that the electronic camera has function of recording in a moving video mode and static image mode. Claim 1 of the instant application therefore is not patently distinct from the earlier patent claim and as such is unpatentable for obvious-type double patenting.

All the limitations of the instant application claim 2 are encompassed by the limitation of the patent claims 1 and 6.

All the limitations of the instant application claim 3 are encompassed by the limitation of the patent claims 1 and 6.

All the limitations of the instant application claim 4 are encompassed by the limitation of the patent claims 1 and 8.

Claim 1 of the instant application is anticipated by patent claims 13 and 18 in that patent claims 13 and 18 contain all the limitations of claim 1 of the instant application. Noted that patent claims 13 and 18 disclose an electronic camera and displaying images on a display screen in moving images mode and still images mode. This indicates that the electronic camera has function of recording in a moving video mode and static image mode. Claim 1 of the instant application therefore is not patently distinct from the earlier patent claim and as such is unpatentable for obvious-type double patenting.

All the limitations of the instant application claim 2 are encompassed by the limitation of the patent claims 1 and 18.

All the limitations of the instant application claim 3 are encompassed by the limitation of the patent claims 1 and 18.

All the limitations of the instant application claim 4 are encompassed by the limitation of the patent claims 1 and 20.

Regarding application claim 5, application claim 5 is rejected for the same reason given in application claim 1 as discussed above.

Regarding application claim 7, application claim 7 is rejected for the same reason given in application claim 4 as discussed above.

Regarding application claim 8, application claim 8 is rejected for the same reason given in application claim 2 as discussed above.

All the limitations of the instant application claim 9 are encompassed by the limitation of the patent claims 1 and 2.

All the limitations of the instant application claim 10 are encompassed by the limitation of the patent claims 1 and 2.

All the limitations of the instant application claim 9 are encompassed by the limitation of the patent claims 13 and 14.

All the limitations of the instant application claim 10 are encompassed by the limitation of the patent claims 13 and 14.

Instant application claims 11, 13-16 are method claims of instant application apparatus claims 5, 7-10, respectively. Therefore, instant application claims 11, 13-16 are rejected for the same reason given in instant application apparatus claims 5, 7-10, respectively.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571)272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHIEH M. FAN can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUONG T NGUYEN/
Primary Examiner, Art Unit 2622
08/05/12

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	Art Unit
	LUONG T NGUYEN	2622

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
348/220.1, 222.1, 294, 322, 311, 312, 317 (text search)	3/10/2012	LTN
EAST (USPAT; USPGPUB; JPO; EPO; DERWENT; IBM_TDB)	3/10/2012	LTN
updated East	8/5/2012	LTN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	Art Unit
	LUONG T NGUYEN	2622

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/10/2012	08/05/2012							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	-							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
	12	✓	-							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	NAKANO et al.
Application No.:	12/845,266
Filed:	7/28/2010
Title:	ELECTRIC CAMERA
Art Unit:	2622
Exr.:	Nguyen
CONF. No.:	**9653**

REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

MS: AF **August 15, 2012**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Request for Reconsideration is filed in response to the Final Office Action dated August 6, 2012.

Accompanying the present response is a terminal disclaimer. No new claims have been added, no claims have been cancelled, no claims have been amended, and no new matter has been added. The Applicants submit that this submission places the application in condition for allowance.

Reconsideration and allowance of this application, as amended, is respectfully requested.

EXAMINER INVITED TO TELEPHONE

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any Examiner's Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

CONCLUSION

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus, LLP Deposit Account No. 01-2135 (Docket No. 500.38315VC3), and please credit any excess fees to such deposit account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP

By /Ayal I. Sharon/
Ayal I. Sharon
Registration No. 55,986

AIS/kmh
1300 North Seventeenth Street, Suite 1800
Arlington, Virginia 22209
Telephone: (703) 312-6600
Facsimile: (703) 312-6666

PTO/SB/26 (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT	Docket Number (Optional) 500.38315VC3

In re Application of: T. NAKANO

Application No.: 12/845,266

Filed: 7/28/2010

For: ELECTRIC CAMERA

The owner* Hitachi, Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,765,616. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record.

/Melvin Kraus / 08/15/2012
Signature Date

Melvin Kraus Reg. No. 22,466
Typed or printed name

(703) 312-6600
Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner). Form PTO/SB/96 may be used for making this statement. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	13503899
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	Ayal I. Sharon/Krista Hargrove
Filer Authorized By:	Ayal I. Sharon
Attorney Docket Number:	500.38315VC3
Receipt Date:	15-AUG-2012
Filing Date:	28-JUL-2010
Time Stamp:	15:20:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment After Final	38315RequestRecon.pdf	84361 77baf233972bb67eebdd4cfad12b614d95f7ced2	no	2

Warnings:	
Information:	

2	Terminal Disclaimer Filed	38315TermDis.pdf	97656 277d570e9df6ea423d330726e54669c2c3b0d3eb	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	182017	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	12/845,266	NAKANO ET AL.	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 08/15/12	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

Angie Walker

U.S. Patent and Trademark Office

Notice of Allowability	Application No.	Applicant(s)	
	12/845,266	NAKANO ET AL.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed on 07/16/12;Terminal Disclaimer filed 08/15/12 and Interview on 08/22/12*.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-5,7-11,13-16 (renumbered as 1-14, respectively)*.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/LUONG T NGUYEN/
Primary Examiner, Art Unit 2622

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

20457 7590 08/24/2012

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
NGUYEN, LUONG TRUNG	
ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 08/24/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

TITLE OF INVENTION: ELECTRIC CAMERA

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1740	$300	$0	$2040	11/26/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20457 7590 08/24/2012

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

TITLE OF INVENTION: ELECTRIC CAMERA

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1740	$300	$0	$2040	11/26/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, LUONG TRUNG	2622	348-222100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3	9653

20457 7590 08/24/2012

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
NGUYEN, LUONG TRUNG	
ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 08/24/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 136 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 136 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	12/845,266	NAKANO ET AL.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

All participants (applicant, applicant's representative, PTO personnel):

(1) *LUONG T. NGUYEN*. (3)_____.

(2) *AYAL I. SHARON (Reg. No. 55,986)*. (4)_____.

Date of Interview: *22 August 2012*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,3,5,7,9,11,13 and 15*.

Identification of prior art discussed: *N/A*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Mr. Sharon agrees to the changes as indicated in the Examiner's Amendment.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/LUONG T NGUYEN/ Primary Examiner, Art Unit 2622	

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Ayal I. Sharon on 08/22/2012.

2. The application has been amended as follows:

CLAIMS

Claim 1 (line 11), "generates image signals" has been changed to --generates the image signals--.

Claim 1 (line 15), "generates image signals" has been changed to --generates the image signals--.

Claim 1 (line 19), "generates image signals" has been changed to --generates the image signals--.

Claim 3 (line 2), "generates image signals" has been changed to --generates the image signals--.

Claim 5 (line 10), "generates image signals" has been changed to --generates the image signals--.

Claim 5 (line 13), "an image in a static image mode" has been changed to --the image in the static image mode --.

Claim 5 (line 14), "generates image signals" has been changed to --generates the image signals--.

Claim 5 (line 17), "recording an image in a moving video mode" has been changed to --recording the image in a moving video mode--.

Claim 5 (line 18), "generates image signals" has been changed to --generates the image signals--.

Claim 7 (line 5), "generates image signals" has been changed to --generates the image signals--.

Claim 9 (line 3), "the display screen" has been changed to --the display screen.--.

Claim 11 (line 12), "recoding an image in the static image mode" has been changed to --recording the image in the static image mode--.

Claim 11 (line 12), "monitoring an image" has been changed to --monitoring the image--.

Claim 11 (line 14), "recoding an image in the static image mode" has been changed to --recording the image in the static image mode--.

Claim 11 (line 15), "generates image signals" has been changed to --generates the image signals--.

Claim 11 (line 18), "monitoring an image" has been changed to --monitoring the image--.

Claim 11 (line 19), "generates image signals" has been changed to --generates the image signals--.

Claim 11 (line 23), "recoding an image in the moving video mode" has been changed to --recording the image in the moving video mode--.

Claim 11 (line 24), "generates image signals" has been changed to --generates the image signals--.

Claim 13 (line 3), "generates image signals" has been changed to --generates the image signals--.

Claim 15 (line 3), "a display screen" has been changed to --the display screen--.

REASONS FOR ALLOWANCE

3. Claims 1-5, 7-11, 13-16 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 1-5, 7-11, 13-16 are allowed in view of Terminal Disclaimer filed on 08/15/2012.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571)272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHIEH M. FAN can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUONG T NGUYEN/
Primary Examiner, Art Unit 2622
08/22/12

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	**Art Unit**
	LUONG T NGUYEN	2622

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
348	294	H	0	4	N	5 / 335 (2011.01.01)					

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
348	322	312	273		

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
2	2														
3	3														
4	4														
5	5														
	6														
6	7														
7	8														
8	9														
9	10														
10	11														
	12														
11	13														
12	14														
13	15														
14	16														

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 14	
/LUONG T NGUYEN/ Primary Examiner.Art Unit 2622 (Primary Examiner)	08/22/2012 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S25	3	10/660710	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:05
S26	2362	348/294.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:09
S27	7432	vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:11
S28	125	S26 and S27	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:11
S29	16	S28 and @ad <"20000111"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:13
S30	212	348/322.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:14
S31	569	348/312.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:14
S32	1131	348/302.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:14
S33	242	S27 and (S30 or S31 or S32)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:14
S34	87	S33 and @ad <"20000111"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:15
S35	641	348/272.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:29
S36	81	S35 and S27	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:29

S37	11	S36 and @ad <"20000111"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:29
S38	841	348/273.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:30
S39	203	S38 and @ad <"20000111"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:31
S40	36	S39 and S27	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:31
S41	496	nakano-takahiro$5.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:34
S42	7	S41 and S27	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:34
S43	70	nishimura-ryuji$5.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:35
S44	205	kinugasa-toshiro$5.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:36
S45	66	S44 and (add$3 or mix$3 or cull$3 or combin$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 16:37
S52	6	vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1) with (static near2 mode)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 17:29
S53	11	vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1) with (still near2 mode)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 17:29
S54	22	vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1) with (mov$3 near2 mode)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/08/22 17:30

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S48	912	(vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1)).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2012/08/22 16:39
S49	0	((vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or	US-PGPUB;	OR	ON	2012/08/22 16:42

		sensor$1)) and display$3 and record$3 and monitor$3 and scan$4).clm.	USPAT; UPAD			
S50	2	((vertical with (add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1)) and display$3 and record$3 and scan$4).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2012/08/22 16:43
S51	157	(((add$3 or mix$3 or cull$3 or combin$3) with (pixel$1 or charge$1 or sensor$1)) and display$3 and record$3 and scan$4).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2012/08/22 16:44

8/ 22/ 2012 5:32:32 PM
C:\ Users\ lnguyen2\ Documents\ EAST\ Workspaces\ 12845266.wsp

It's OK to enter
/L.T.N./
08/22/2012

500.38315VC3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	NAKANO et al.
Application No.:	12/845,266
Filed:	7/28/2010
Title:	ELECTRIC CAMERA
Art Unit:	2622
Exr.:	Nguyen
CONF. No.:	**9653**

REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

MS: AF **August 15, 2012**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Request for Reconsideration is filed in response to the Final Office Action dated August 6, 2012.

Accompanying the present response is a terminal disclaimer. No new claims have been added, no claims have been cancelled, no claims have been amended, and no new matter has been added. The Applicants submit that this submission places the application in condition for allowance.

Reconsideration and allowance of this application, as amended, is respectfully requested.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 9653

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/845,266	07/28/2010	348	2622	500.38315VC3

APPLICANTS

Takahiro Nakano, Hitachinaka, JAPAN;
Ryuji Nishimura, Yokohama, JAPAN;
Toshiro Kinugasa, Hiratsuka, JAPAN;

**** CONTINUING DATA ***************************

This application is a CON of 10/660,710 09/12/2003 PAT 8,059,177
which is a DIV of 09/520,836 03/08/2000 PAT 6,765,616

**** FOREIGN APPLICATIONS ***************************

JAPAN 00-006064 01/11/2000

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/06/2010

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /LUONG TRUNG NGUYEN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		JAPAN	8	16	3

ADDRESS

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873
UNITED STATES

TITLE

ELECTRIC CAMERA

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12845266	NAKANO ET AL.
	Examiner	Art Unit
	LUONG T NGUYEN	2622

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
348/220.1, 222.1, 294, 322, 311, 312, 317 (text search)	3/10/2012	
EAST (USPAT; USPGPUB; JPO; EPO; DERWENT; IBM_TDB)	3/10/2012	LTN
updated East	8/5/2012	LTN
348/ 294, 322, 312, 272, 273 (text search)	8/22/2012	LTN
EAST (USPAT; USPGPUB; JPO; EPO; DERWENT; IBM_TDB)	8/22/2012	LTN
Inventorship search	8/22/2012	LTN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
	USPAT, UPAD, USPGPUB text search, see interference search history	8/22/2012	LTN

	/L.T.N./ Primary Examiner.Art Unit 2622

PART B- FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Or Fax **(571) 273-2885**

500.38315VC3

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks I through 5 should be completed where appropriate. All Further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as Indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for Maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)
020457 7590 8/24/2012

ANTONELLI, TERRY STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying Papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope Addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	7/28/2010	Takahiro NAKANO	500.38315VC3	9653

TITLE OF INVENTION: ELECTRIC CAMERA

APPL. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE (S) DUE	DATE DUE
Nonprovisional	NO	$1770	$300	$0	$2070	**11/26/2012**

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, LUONG TRUNG	2622	348-222100

1. Change of correspondence address or indication of "Fee Address: (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122 attached.
agents OR, alternatively,
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of Customer Number is required.

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys **1 ANTONELLI, TERRY, STOUT & KRAUS, LLP.**
Or agents OR, alternatively,
(2) the name of single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed no name will be printed.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: **HITACHI, LTD.**

(B) RESIDENCE: (CITY and STATE OR COUNTRY): **Tokyo, Japan**

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☒ Advance Order- # of Copies 4

4b. Payment of Fee (s):
☐ A check is enclosed.
☒ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number **01-2135**.

5. Change in Entity Status (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in Interest as shown by the records of the United States patent and Trademark Office.

Authorized Signature /Ayal Sharon/ Date: **November 21, 2012**

Typed or printed name **Ayal Sharon** Registration No. **55,986**

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and Submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent tot eh Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal

Application Number:	12845266
Filing Date:	28-Jul-2010
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Filer:	Ayal I. Sharon/Jessica Smith
Attorney Docket Number:	500.38315VC3

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1770	1770
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
Printed copy of patent - no color	8001	4	3	12
		Total in USD ($)		**2082**

Electronic Acknowledgement Receipt

EFS ID:	14285182
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	Ayal I. Sharon/Jessica Smith
Filer Authorized By:	Ayal I. Sharon
Attorney Docket Number:	500.38315VC3
Receipt Date:	21-NOV-2012
Filing Date:	28-JUL-2010
Time Stamp:	09:39:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$2082
RAM confirmation Number	8976
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Issue Fee Payment (PTO-85B)	IF38315VC3.pdf	221303 29ce7a91b1924a14423084dc56b58cc513c2171b	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	33327 e15f5f96c5e6aab1d432bdd854ec6304ae73f057	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	254630		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	12/25/2012	8339493	500.38315VC3	9653

20457 7590 12/05/2012

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 136 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Takahiro Nakano, Hitachinaka, JAPAN;
Ryuji Nishimura, Yokohama, JAPAN;
Toshiro Kinugasa, Hiratsuka, JAPAN;

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AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Eastern District of Texas, Texarkana Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	11/18/2016	for the Eastern District of Texas, Texarkana Division

PLAINTIFF	DEFENDANT
HITACHI MAXELL, LTD.	ZTE CORP. and ZTE USA, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	5,396,443	3/7/1995	Hitachi Maxell, Ltd.
2	6,748,317	6/8/2004	Hitachi Maxell, Ltd.
3	8,339,493	12/25/2012	Hitachi Maxell, Ltd.
4	8,736,729	5/27/2014	Hitachi Maxell, Ltd.
5	6,408,193	6/18/2002	Hitachi Maxell, Ltd.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

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	11/18/2016	for the Eastern District of Texas, Texarkana Division
PLAINTIFF HITACHI MAXELL, LTD.		DEFENDANT ZTE CORP. and ZTE USA, INC.

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5	6,408,193	6/18/2002	Hitachi Maxell, Ltd.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

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Paper 9
Entered: June 1, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZTE CORPORATION and ZTE (USA), INC.,
Petitioners,

v.

MAXELL, LTD.,
Patent Owner.

Case IPR2018-00236
Patent 8,339,493 B2

Before MINN CHUNG, TERRENCE W. McMILLIN, and JOHN A. HUDALLA, *Administrative Patent Judges.*

McMILLIN, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

ZTE Corporation and ZTE (USA), Inc. ("Petitioner")[1] filed a Petition ("Pet.") (Paper 2) to institute an *inter partes* review of claims 5 and 6 of Patent 8,339,493 B2 (the "'493 patent") (Ex. 1001) pursuant to 35 U.S.C. § 311 *et seq*. Patent Owner Maxell, Ltd. ("Patent Owner")[2] filed a Preliminary Response ("Prelim. Resp.") (Paper 6) to the Petition.

This is a preliminary proceeding to decide whether *inter partes* review of the '493 patent should be instituted under 35 U.S.C. § 314(a), which provides that *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." *See* 35 U.S.C. § 314(a) (regarding institution of *inter partes* review); 37 C.F.R § 42.4(a) (delegating authority to institute trial to the Board).

Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we conclude that the information presented fails to show that there is a reasonable likelihood that Petitioner will prevail in establishing the unpatentability of at least one of the challenged claims of

---

[1] In the caption of the Petition, both ZTE Corporation and ZTE (USA), Inc. are identified as Petitioner. In the body of the Petition, ZTE (USA), Inc. is identified as the sole Petitioner and ZTE Corporation is identified as an additional real party in interest. Pet. 1.

[2] In the caption of the Petition, the Patent Owner is identified by the Petitioner as Hitachi Maxell, Ltd. In the caption of Patent Owner's Mandatory Notices, the Patent Owner is identified as Hitachi Maxell, Ltd. but, in the body of this same document, the Patent Owner is identified as Maxell, Ltd. (Paper 5, 2). In the caption and body of the Preliminary Response (Paper 6, 1), Patent Owner identifies itself as Maxell, Ltd.

the '493 patent. For the reasons that follow, the Board has determined not to institute an *inter partes* review.

A. Related Matters

Both parties identify one related matter under 37 C.F.R. § 42.8(b)(2), *Maxell, Ltd. v. ZTE Corporation and ZTE USA Inc.*, 5:16-cv-00179-RWS (E.D. Tex.),[3] that would affect, or be affected by, a decision in this proceeding. Pet. 1; Paper 5, 2.

B. The '493 Patent (Ex. 1001)

The '493 patent, is titled "Electric Camera." Ex. 1001, (54). It issued on December 25, 2012, based on an application filed July 28, 2010. *Id.* at (22), (45). It claims priority as a continuation of a U.S. application filed September 12, 2003, which in turn claims priority as a division of a U.S. application filed March 8, 2000. *Id.* at (60). Priority is also claimed to a Japanese patent application filed January 11, 2000. *Id.* at (30), 1:6–14.

The '493 patent relates to "video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels." *Id.* at 2:57–61. An object of the invention is to provide an electric camera "which uses an image sensing device with a sufficient number of pixels for still images and enables the taking of highly detailed still images and a moving video taking with reduced image quality degradation without increasing circuitry such as field memory." *Id.* at 3:8–

[3] Petitioner identifies the plaintiff as Hitachi Maxell, Ltd. Pet. 1. Patent Owner identifies the plaintiff as Maxell, Ltd. Paper 5, 2.

13. "It is also an object of the present invention to provide an electric camera that can also realize the image stabilizing function." *Id.* at 3:13–15.

C. The Challenged Claims

Of the challenged claims of the '493 patent, claim 5 is independent, and claim 6 depends from claim 5. Claims 5 and 6 recite:

> 5. An electric camera comprising:
> an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines;
> a signal processing unit that generates image signals by processing the output signals of the image sensing device; and
> a display unit with a display screen, that displays an image corresponding to the image signals;
> wherein when recording an image in a static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;
> wherein when monitoring the image in the static image mode, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and
> wherein when recording the image in a moving video mode, the signal processing unit generates the image signals by using a portion of, or the entirely of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.
>
> 6. An electric camera according to the claim 5, further comprising:
> an image-instability detector which detects an image-instability of the electric camera; and

> wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates the image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

Ex. 1001, 16:32–17:3.

D. The Prior Art

Petitioner relies on the following prior art:

U.S. Patent 5,493,335, issued February 20, 1996 ("Parulski '335") (Ex. 1003);

U.S. Patent 5,440,343, issued August 8, 1995 ("Parulski '343") (Ex. 1004);

U.S. Patent 5,497,192, issued March 5, 1996 ("Ishizuka") (Ex. 1005);

U.S. Patent 5,828,406, issued October 27, 1998 ("Parulski '406") (Ex. 1006); and

U.S. Patent 6,512,541 B2, filed December 8, 1997 ("Dunton") (Ex. 1007). Pet. 3–4

E. The Asserted Grounds

Petitioner challenges claims 5 and 6 of the '493 patent on the following grounds:

Claim 5 as obvious under 35 U.S.C. § 103 in view of Parulski '335 and Parulski '343;

Claim 6 as obvious under 35 U.S.C. § 103 in view of Parulski '335, Parulski '343, and Ishizuka;

Claim 5 as obvious under 35 U.S.C. § 103 in view of Parulski '406 and Dunton; and

Claim 6 as obvious under 35 U.S.C. § 103 in view of Parulski '335, Dunton, and Ishizuka. Pet. 6.

II. ANALYSIS

A. Relevant Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze the asserted grounds based on obviousness with the principles identified above in mind.

B. Grounds Based on Parulski '335

Petitioner challenges independent claim 5 as obvious in view of Parulski '335 and Parulski '343; dependent claim 6 as obvious in view of Parulski '335, Parulski '343, and Ishizuka; and dependent claim 6 as obvious in view of Parulski '335, Dunton, and Ishizuka. Pet. 6. As discussed below, Petitioner does not persuasively show that Parulski '335 teaches certain limitations in claim 5.

The "Display" Limitation

Claim 5 recites, "a display unit with a display screen, that displays an image corresponding to the image signals." Ex. 1001, 16:40–41 (the

"display" limitation). Petitioner relies on Parulski '335 as teaching the "display" limitation. Pet. 23. The Petition states:

> Parulski [']335 discloses "Referring initially to FIG. 1 ... a control and display section 14 for user interface with the camera...)." Ex. 1003 at 3:25-39. Further in FIG 1. "The microprocessor controller 82 also controls a display element 50a in the viewfinder 50 (for indicating flash ready, under/over exposure, and the like), and receives exposure data from the photocell 54... While the processing and storage section 12 automatically controls image exposure upon the CCD sensor 28 by means of data input from the photocell 54, a plurality of switches are provided in the control and display section 14 for manually activating a variety of additional features. (Some switches directly activate the respective features, while other switches activate a menu of choices on a liquid crystal display (LCD) 90.)" *Id.* at 4:55-66 (emphasis added).

Pet. 23. The passages Petitioner cites in Parulski '335 (Ex. 1003, 3:25–39, 4:55–66) refer to two displays: (1) display element 50a in the viewfinder 50 and (2) LCD 90. *See* Ex. 1003, Fig. 1. Patent Owner argues,

> nowhere in the sections cited by Petitioner or in Parluski '335 is there any discussion of display element 50a or LCD 90 displaying an image corresponding to **the** image signals that, according to claim 5, are generated by a signal processing unit "by processing the output signals of the image sensing device."

Prelim. Resp. 15 (citing Ex. 1001, 16:37–39).

We agree with Patent Owner that Parulski '335 does not expressly disclose display element 50a or LCD 90 displaying an image corresponding to the image signals. Figure 1 of Parulski '335 is reproduced below (red boxes around viewfinder 50 and LCD 90 added).

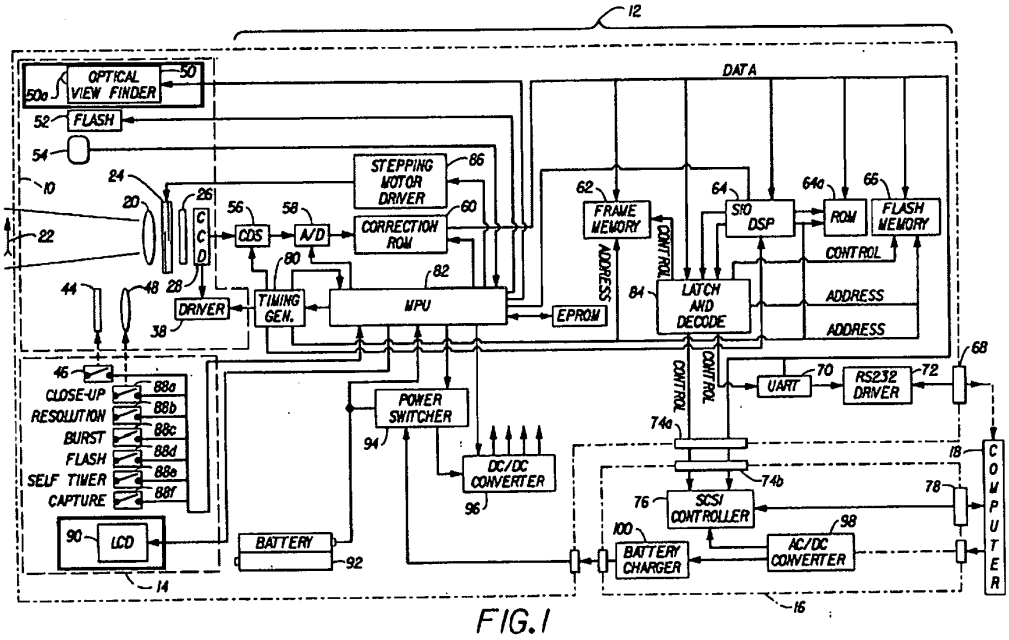


FIG. 1

Figure 1 depicts the elements of an electric camera in block form. Ex. 1003, 3:26–27. There is no indication in Figure 1 that display element 50a in viewfinder 50 or LCD 90 are connected in the depicted device in such a way as to receive any data allowing for display of an image corresponding to the image signals. To the contrary, neither display element 50a in viewfinder 50 nor LCD 90 are shown to receive any output from the charge-coupled (CCD) image sensor 28 or from the image data processing and storage apparatus in the upper right corner of Figure 1. We agree with Patent Owner that "the still image data from A/D 58 through correction ROM 60 and through DSP 64 is routed to the computer without a path to the LCD [90] or the optical viewfinder 50." Prelim. Resp. 18.

Furthermore, Parulski '335 teaches that its displays are used for other purposes. Parulski '335 states that "display element 50a in the viewfinder 50" is "for indicating flash ready, under/over exposure, and the like."

Ex. 1003, 4:56–57. LCD 90 displays "a menu of choices." *Id.* at 4:65–5:10. Parulski '335 states:

> switches activate *a menu of choices on a liquid crystal display (LCD) 90.* For instance, a switch 88a moves the close-up lens 48 into position, a switch 88b allows the user to select which of two (high or low) different resolution levels of sensor data are stored in the frame buffer memory 62, a switch 88c activates a low resolution "burst" mode in which several pictures are rapidly taken, as switch 88d activates the flash unit 52, and a switch 88e activates a self-timer delay mode. A capture switch 88f initiates each exposure. *The liquid crystal display (LCD) 90 indicates the selected feature values.*

Id. (emphases added). Parulski '335 provides no support for finding the display element 50a in viewfinder 50 or the LCD 90 display is an image corresponding to the image signals. Thus, Parulski '335 does not expressly teach the "display" limitation.

In the absence of any express teaching on the "display" limitation in Parulski '335, Petitioner alludes to the knowledge of a person of ordinary skill in the art ("POSITA") and relies on the Declaration of Dr. Barmak Mansoorian ("Mansoorian Declaration") (Ex. 1002). The Petition states:

> it would have been obvious to a POSITA that an electric camera would include a display screen. Ex. 1002 at ¶38; 86. The display screen would present the captured object on a display so that the user to review image, activate additional features if needed, such as zoom in/out, and make decisions, such as delete, save or transfer the image. *Id.*

Pet. 23. The only evidence cited in support of the conclusion that it would be obvious that an electric camera would include a display screen for

displaying images are paragraphs 38 and 86 of the Mansoorian Declaration. Paragraph 38 states:

> 38. Almost all of the digital cameras include an image sensing device to capture light coming through the lens to form image signals, an image signal processing device to process the signal, and *a display device to display captured images*. Additionally, most cameras would have a mode selector that the user can select to record still images or videos.

Ex. 1002 ¶ 38 (emphasis added). Paragraphs 85 and 86 of the Mansoorian Declaration relate specifically to the "display" limitation and state:

> 85. Parulski [']335 discloses an electrical camera having a display unit. As discussed earlier, a display unit is one of the conventional components to an electric camera. As shown in FIG. 1, section 14 represents the display section for user interface with the camera.
>
> 86. Furthermore, it would have been obvious to a POSITA or even to a regular customer that a display unit is a basic part of an electric camera. Having a display unit is essential to the user to review captured images and make decision on whether to save, alter, or delete the image.

Id. ¶¶ 85–86. However, we accord Dr. Mansoorian's testimony as to what would have been obvious no weight because it relates to the wrong time period.

Specifically, the Mansoorian Declaration states: "I also understand that the ***earliest possible priority date*** for the []'493 Patent ***is July 28, 2010***. I have therefore analyzed obviousness as of that date or somewhat before that date." Ex. 1002 ¶ 32 (emphases added). The Petition states: "[t]he earliest effective filing date of the claims of the [']493 patent is July 28,

2010. (*See* Ex. 1001)." Pet. 3. Patent Owner asserts the priority date of the claims of the '493 patent is January 11, 2000. Prelim. Resp. 3–4.

The application for the '493 patent was filed on July 28, 2010. Ex. 1001, (22). However, this application was a **continuation** of an application filed September 12, 2003 which was a **division** of an application filed March 8, 2000. *Id.* at (60), 1:6–14. And, priority is claimed to a Japanese application filed January 11, 2000. *Id.* at (30). Considering the continuity of applications as indicated on the front page of the '493 patent, and absent any argument or evidence to the contrary, we accept the patentee's priority claims to the Japanese application. For purposes of this Decision, we conclude that the priority date for the challenged claims of the '493 patent is January 11, 2000. *Id.* at (30). Thus, the "earliest possible priority date" used by Dr. Mansoorian to analyze obviousness was off by about 10 years (2000–2010). The parties seem to agree that the technology relating to electric cameras advanced a great deal in this time period. *See* Ex. 1002 ¶¶ 37–38; Prelim. Resp. 3–4. For these reasons, we accord Dr. Mansoorian's testimony no weight because it is not tied to the time of the invention. As a result, we are not persuaded by Petitioner's contentions about how an ordinarily skilled artisan would have found the "display" limitation obvious.

Petitioner's showing with regard to the "display" limitation is also inconsistent with Petitioner's construction of this limitation. As part of its proposed construction for the "display" limitation, Petitioner contends "[t]he structure for the term should be 'display screen of a television system' . . . or other screen compatible with NTSC or PAL format." Pet. 13 (citing Ex. 1001, 1:35–36, 3:22–23, 10:19–21). Patent Owner argues, "Grounds A-

D [all asserted grounds] should not be instituted at least due to Petitioner's clear error of not applying its own proposed construction when setting forth its grounds of obviousness." Prelim. Resp. 13.

37 C.F.R. § 42.104(b)(3) and (4), which relate to the content of petitions, require statements of "[h]ow the challenged claim is to be construed" and "'[h]ow the construed claim is unpatentable." Thus, this rule requires that the construction of a claim in a Petition be consistent with the unpatentability contentions in a petition. Regardless of whether or not Petitioner's proposed construction is correct,[4] Petitioner makes no showing that the art cited for the "display" limitation teaches a television screen or other screen compatible with either the NTSC or the PAL format. Therefore, Petitioner has violated Section 42.104(b)(3) and (4) by failing to show that the prior art teaches or suggests the "display" limitation under its own proposed construction.

For these reasons, we determine that Petitioner has failed to establish a reasonable likelihood of showing the cited art teaches or suggests "a display unit with a display screen, that displays an image corresponding to the image signals."

The "Monitoring" Limitation

Claim 5 recites:

> when *monitoring the image in the static image mode*, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically

[4] In the litigation between the parties, the District Court adopted a "[p]lain and ordinary meaning" construction of the "display" limitation. Ex. 2001, 12. We agree with the District Court for purposes of this Decision.

> arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance.

Ex. 1001, 16:48–52 (the "monitoring" limitation) (emphasis added). Here again, Petitioner relies on Parulski '335 for teaching this limitation. Pet. 25–27 (citing Ex. 1003, 2:32–38, 5:52–61). Patent Owner argues, "[t]he Petition just identifies two resolution modes in Parulski '335 and provides discussion on using fewer pixel lines when generating low resolution images . . . . But there is no discussion in the Petition about how the low resolution images of Parulski '335 are **monitored**." Prelim Resp. 22 (citation omitted).

We agree with Patent Owner. Petitioner never argues or presents any evidence that Parulski '335 teaches or suggests "monitoring the image in the static image mode." *Id.* Although neither party proposes that this "monitoring" phrase requires construction (*see* Pet. 11–13; Prelim. Resp. 7–10), we note that the Specification of the '493 patent describes "monitoring the image in the static image mode" as the generation and output of television signals. *See* Ex. 1001, 7:31–39 ("In the static image mode, too, until the recording is requested by the record button 15, the camera outputs signals compatible with the television system to **monitor** the angle of view. . . . Hence, during the monitoring the television signals need to be generated from the signals coming from the entire pixel area."), 14:47–50 ("television signals can be generated by using the signals of all pixels of the image sensing device also during the **monitoring** in the static image mode.") (emphases added). And, in the Specification and the claims, "monitoring" is used to describe a process which is distinct from recording or storing. For example, the Specification of the '493 patent states:

> During the **monitoring** in the static mode, the signals are mixed together inside the image sensing device to reduce the number of signals and thereby generate television signals. During **recording**, however, the mixing processing is not performed and all the pixel signals need to be read out independently of each other in order to produce high resolution signals.

Id. at 8:52–58 (emphasis added).

In contrast, all the passages Petitioner cites in the Petition as teaching the "monitoring" limitation relate to the recording or storage of images.[5] *Id.* Specifically, Petitioner quotes the following passages from Parulski '335 (Pet. 26–27):

> A resolution mode switch selects the pixel resolution of the image by specifying the order in which the color image pixels are ***selected for storage*** in both vertical and horizontal directions, the order including . . . at least one reduced resolution mode in which a fewer number of color image pixels are selected.
>
> * * * *
>
> According to the invention, the camera includes the switch 88b which allows the user to select the ***image record size***, that is, which of two different resolution levels of sensor data are ***stored*** in the frame buffer memory 62. When the switch 88b activates the "low resolution" mode, the timing generator 80 changes the timing to the buffer memory 62 so that, in one embodiment, only a quarter of the pixels on the CCD sensor 28 are ***stored*** in the memory 62.

---

[5] The "monitoring" limitation is the second "wherein" limitation recited in claim 5. Ex. 1001, 16:47–52. The first and third "wherein" limitations in claim 5 recite, "wherein when ***recording*** an image in a static image mode" and "wherein when ***recording*** an image in a moving video mode," respectively, and, thus, relate to storage of images. *Id.* at 16:43–46, 53–60. Petitioner cites the same passages of Parulski '335 against the first and third "wherein" clauses that are cited against the second "wherein" clause. *See* Pet. 24, 27–28,

* * * *

> In order to form the low resolution images, a suitable "subsampling" pattern is required. For example, if only every second pixel of every second line was ***selected for storage*** in the buffer memory, the image would contain only values of one of the three colors.

Ex. 1003, 2:32–38, 5:52–59, 6:4–8 (emphases added). We agree with Patent Owner that "there can be no **monitoring** of **the** image without any display" for displaying images in Parulski '335. *See* Prelim. Resp. 22.

Petitioner also cites to the Mansoorian Declaration in the presentation relating to the "monitoring" limitation. Pet. 26 (citing Ex. 1002 ¶¶ 92–93). Relying on the Mansoorian Declaration, the Petition states, "[a] POSITA would have been aware of the concept that fewer pixel lines would be selected for reduced resolution images than full/high resolution images." *Id.* Assuming this statement is accurate, it does not clearly address or relate to "monitoring the image in the static image mode," as recited in claim 5. Cited paragraphs 92 and 93 of the Mansoorian Declaration state:

> 92. It would have been obvious to a POSITA that videos produce large amount[s] of data, even for just a one-second video clip. It is therefore ideal to reduce the resolution for video image.
>
> 93. Reduced resolution image signals can be produced by using mixed or culled pixel lines to include only pixel lines separated from one another by first interval distance, for example, skipping lines or selecting only every second pixel of every second line was selected.

Ex. 1002 ¶¶ 92–93. Again, these paragraphs do not address or relate to generation and output of television signals. Rather, Dr. Mansoorian relies on the same passages cited in the Petition which, as shown above, relate to storage of images. *See* Ex. 1002 ¶ 94 (quoting Ex. 1003, 5:52–59, 6:4–8).

And, for the reasons stated previously, we accord no weight to Dr. Mansoorian's testimony relating to what would have been obvious because it relates to the wrong time period.

Thus, Petitioner fails to show Parulski '335 teaches or suggests the "monitoring" limitation.

For at least these reasons, Petitioner has not shown that there is a reasonable likelihood that it would prevail with respect to its challenge to claim 5 in those grounds in which Petitioner relies on Parulski '335 in the combination of cited references. For these grounds, Petitioner exclusively relies on Parulski '335 as teaching the "display" limitation and the "monitoring" limitation. *See* Pet. 23, 25–27. Petitioner relies on the same deficient analysis in the grounds for dependent claim 6, so we also determine that Petitioner has not shown that there is a reasonable likelihood that it would prevail with respect to its challenge to claim 6. *See* Pet. 30–33, 45–48.

C. Ground Based on Parulski '406 and Dunton

Petitioner challenges independent claim 5 as obvious in view of Parulski '406 and Dunton. Pet. 6. As discussed below, Petitioner has not shown a reasonable likelihood that this combination of references teaches all the limitations of claim 5.

The "Display" Limitation

Petitioner relies on Parulski '406 as teaching the "display" limitation of claim 5. Pet. 36–38. As noted above, Petitioner argues the "display" limitation should be construed as "[t]he structure of the term should be 'display screen of a television system' . . . or other screen compatible with NTSC or PAL format." Pet. 13 (citing Ex. 1001, 1:35–36, 3:22–23, 10:19–

21). Petitioner fails to show Parulski '406 teaches a display screen of a television system or other screen compatible with the NTSC or PAL format. *See* Pet. 36–38. For the same reasons discussed above, Petitioner's showing with regard to the "display" limitation violates 37 C.F.R. § 42.104(b)(3) and (4), and Petitioner has failed to establish a reasonable likelihood of showing the cited art teaches or suggests "a display unit with a display screen, that displays an image corresponding to the image signals."

The "Monitoring" Limitation

Petitioner cites Parulski '406 as teaching the "monitoring" limitation. Pet. 39–40. Specifically, Petitioner quotes passages relating to the "second mode" in Parulski '406 as teaching this limitation. *Id.* at 40 (citing Ex. 1006, 6:22–45). This mode in Parulski '406 is a "second 'motion' mode" or video mode as opposed to the "first 'still' mode." Ex. 1006, 6:22–29. In the section relating to the "monitoring" limitation, the Mansoorian Declaration also cites to the "motion preview mode" or the "second mode" of Parulski '406. Ex. 1002 ¶¶ 116–119. In contrast, the "monitoring" limitation recites "monitoring the image in the static image mode." Because Petitioner's obviousness analysis cites video modes rather than a "static image mode" as recited in claim 6, Petitioner fails to demonstrate that Parulski '406 teaches or suggests the "monitoring" limitation.

For at least these reasons, Petitioner has not shown that there is a reasonable likelihood that it would prevail with respect to its challenge to claim 5 in the ground in which Petitioner relies on Parulski '406 in the combination of cited references. For this ground, Petitioner exclusively relies on Parulski '406 as teaching the "display" limitation and the

"monitoring" limitation. *See* Pet. 36–40. Parulski '406 has not been shown to teach these limitations.

D. Conclusion

We conclude that Petitioner has not demonstrated a reasonable likelihood that at least one of the challenged claims is unpatentable based on the asserted grounds. We, therefore, do not institute an *inter partes* review on any of the asserted grounds as to any of the challenged claims of U.S. Patent No. 8,339,493 B2.

III. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* as to all challenged claims and all grounds and no trial is instituted.

IPR2018-00236
Patent 8,339,493 B2

PETITIONER:

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Paper No. 9
Entered: December 26, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OLYMPUS CORPORATION, OLYMPUS CORPORATION OF THE AMERICAS, and OLYMPUS AMERICA INC.,
Petitioner,

v.

MAXELL LTD.,
Patent Owner.

IPR2018-00904 (Patent 8,339,493 B2) IPR2018-00906 (Patent 7,995,897 B2)
IPR2018-00908 (Patent 9,100,604 B2) IPR2018-00909 (Patent 9,100,604 B2)
IPR2018-00910 (Patent 8,059,177 B2) IPR2018-00911 (Patent 7,457,529 B2)

Before LYNNE E. PETTIGREW, MINN CHUNG, TERRENCE W. McMILLIN, and JOHN A. HUDALLA, *Administrative Patent Judges*.[1]

PER CURIAM.

ORDER
Granting Petitioner's Authorized Unopposed Motion to Dismiss Proceeding,
Granting Authorized Joint Request to File Agreement As
Business Confidential Information
37 C.F.R. § 42.74

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[1] This is not an order from an expanded panel of the Board. Judges Pettigrew, Chung, and McMillin are paneled on IPR2018-00908. Judges Chung, McMillin, and Hudalla are paneled on IPR2018-00904, IPR2018-00906, IPR2018-00909, IPR2018-00910, and IPR2018-00911.

I. INTRODUCTION

On December 18, 2018, Olympus Corporation, Olympus Corporation of the Americas, and Olympus America Inc. (collectively "Petitioner") filed Motions to Dismiss the above-referenced proceedings with prejudice (collectively "Motions"). Paper 7, 1–4.[2,3] As indicated in the Motions, the Board authorized the filing of the Motions during a conference call on November 30, 2018. *Id.* at 1. Petitioner further represents that Patent Owner does not oppose the Motions. *Id.* Along with the Motions, Petitioner and Patent Owner (collectively referred to as "the Parties") filed copies of a Patent License Agreement ("Agreement") (Ex. 1018)[4], as well as Joint Requests to File Agreement as Business Confidential Information pursuant to 35 U.S.C. § 317(b) (collectively "Joint Requests") (Paper 8, 1–2).[5,6]

II. DISCUSSION

In its Motions, Petitioner represents that the Parties have resolved their dispute as to the patents in the above-identified *inter partes* review proceedings. Paper 7, 1–2. Further, in the Joint Requests, the Parties: (a)

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[2] For purposes of expediency, we cite to the paper filed in IPR2018-00904. Similar papers were filed in IPR2018-00906 (Paper 9), IPR2018-00908 (Paper 7), IPR2018-00909 (Paper 7), IPR2018-00910 (Paper 7), and IPR2018-00911 (Paper 7).

[3] The pages of the respective Motions are unnumbered.

[4] The parties also filed a copy of the Agreement in IPR2018-00906 (Ex. 1010), IPR2018-00908 (Ex. 1018), IPR2018-00909 (Ex. 1018), IPR2018-00910 (Ex. 1018), and IPR2018-00911 (Ex. 1010).

[5] The Parties filed similar Joint Requests in IPR2018-00906 (Paper 10), IPR2018-00908 (Paper 8), IPR2018-00909 (Paper 8), IPR2018-00910 (Paper 8), and IPR2018-00911 (Paper 8).

[6] The pages of the respective Joint Requests are also unnumbered.

request that the Agreement be treated as business confidential information and be kept separate from the files of the respective patents involved in the above-identified *inter partes* proceedings; (b) represent that the Agreement resolves all currently pending Patent Office and District Court proceedings between the Parties involving the above-identified patents at issue; and (c) represent that the filed copies of the Agreement are true copies. Paper 8, 1–2.

These proceedings are at an early stage, and we have not yet decided whether to institute a trial in any of these proceedings. In view of the early stage of these proceedings and the settlement between the Parties, we determine that good cause exists to dismiss these proceedings with prejudice.

Further, after reviewing the Agreement between the Parties, we find that the Agreement contains confidential business information regarding the terms of settlement. We determine that good cause exists to treat the Agreement between the Parties as business confidential information pursuant to 37 C.F.R. § 42.74(c).

This Order does not constitute a final written decision pursuant to 35 U.S.C. § 318(a).

III. ORDER

Accordingly, for the reasons discussed above, it is:

ORDERED that Petitioner's Motions to Dismiss with prejudice are *granted*, and IPR2018-00904, IPR2018-00906, IPR2018-00908, IPR2018-00909, IPR2018-00910, and IPR2018-00911 are *dismissed with prejudice*;

FURTHER ORDERED that the Joint Requests to File the Settlement Agreement as Business Confidential Information are *granted*, and the

Settlement Agreement shall be kept separate from the files of Patent 8,333,493, Patent 7,995,897, Patent 9,100,604, Patent 8.059,177, and Patent 7,457,529 and made available only to Federal Government agencies on written request, or to any person on a showing of good cause, pursuant to 37 C.F.R. § 42.74(c).

PETITIONER:

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PTO/SB/123 (04-15)
Approved for use through 01/31/2018. OMB 0651-0035
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CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	8339493
Issue Date	December 25, 2012
Application Number	12/845,266
Filing Date	July 28, 2010
First Named Inventor	T. NAKANO
Attorney Docket Number	ASA-9606-04

Please change the Correspondence Address for the above-identified patent to:

☒ The address associated with Customer Number: 24956

OR

☐ **Firm *or* Individual Name**

Address

City	**State**	**ZIP**

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This form will not affect any "fee address" provided for the above-identified patent. To change a "fee address" use the "Fee Address Indication Form" (PTO/SB/47).

I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ Attorney or agent of record. Registration Number 30293.

Signature	/John R. Mattingly/
Typed or Printed Name	John R. Mattingly
Date	January 25, 2019
Telephone	703-684-1120

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Post Issue, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Attorney Docket No. ASA-9606-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

T. NAKANO

Application No.: 12/845,266 ATTENTION

Confirmation No.: 9653 CERTIFICATE OF CORRECTION

Filed: July 28, 2010 BRANCH

U.S. Patent No.: 8,339,493

Issued: December 25, 2012

For: ELECTRIC CAMERA

REQUEST FOR CERTIFICATE OF CORRECTION
APPLICANTS' MISTAKE (37 CFR §1.323)

Director of the U.S. Patent Office
Office of Patent Publications
ATTN: Certificate of Correction Branch
P.O. Box 1450 January 25, 2019
Alexandria, VA 22313-1450

Sir:

Please issue a Certificate of Correction for the above-identified patent to correct the errors listed on the accompanying Form PTO/SB/44.

Pursuant to MPEP §1481, it is submitted that the mistake is either:

(1) of a clerical nature,

(2) of a typographical nature, or

(3) a mistake of minor character.

Furthermore, it is submitted that the correction does not involve changes which would:

(1) constitute new matter, or

(2) require reexamination.

Since the Certificate of Correction is necessitated by a mistake on the part of the Applicants, in accordance with 37 CFR §1.20(a) our Credit Card Payment Form in the amount of $150.00 is attached in payment of the appropriate fee. The Commissioner is hereby authorized to charge additional payment due or to credit any overpayment, to Deposit Account No. 50-1417.

Respectfully submitted,

MATTINGLY & MALUR, P.C.

/John R. Mattingly
John R. Mattingly
Registration No. 30,293
(703) 684-1120

PTO/SB/44 (09-07)
Approved for use through 01/31/2020. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,339,493

APPLICATION NO.: 12/845,266

ISSUE DATE : December 23, 2012

INVENTOR(S) : T. NAKANO, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column (18): Claim 10, line 7 delete "intervals of a given distance" insert --intervals of a first distance--.

MAILING ADDRESS OF SENDER (Please do not use Customer Number below):

John R. Mattingly
MATTINGLY & MALUR, PC
1800 Diagonal Road – Suite 210

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	12845266
Filing Date:	28-Jul-2010
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Filer:	John Roberts Mattingly/Krista Hargrove
Attorney Docket Number:	500.38315VC3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
CERTIFICATE OF CORRECTION	1811	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**150**

Electronic Acknowledgement Receipt	
EFS ID:	34957252
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	John Roberts Mattingly
Filer Authorized By:	
Attorney Docket Number:	500.38315VC3
Receipt Date:	25-JAN-2019
Filing Date:	28-JUL-2010
Time Stamp:	10:18:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$150
RAM confirmation Number	012519INTEFSW10191100
Deposit Account	501417
Authorized User	John Mattingly
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	9606-04-REQUESTCOC.pdf	16850 72fc62722195d3813ed0ef50ce363bccc43a4be8	no	2
Warnings:					
Information:					
2	Request for Certificate of Correction	9606-04-COC.pdf	153649 92e2ed55df45edd92b24c78c4c4a2ca5576f5e7d	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	29827 a68d78f2a3d2be2edbfb2673492dfac215e45250	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	200326		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

■ Practitioners associated with Customer Number: 24956

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

■ The address associated with Customer Number: 24956

OR

☐	Firm or Individual Name		
	Address		
	City	State	Zip
	Country		
	Telephone	Email	

Assignee Name and Address:

Maxell, Ltd.
1, Koizumi, Oyamazaki, Oyamazaki-cho Otokuni-gun, Kyoto 618-8525, Japan

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Kazuhiro Kaizaki	Date	Oct. 17. 2017
Name	Kazuhiro Kaizaki	Telephone	
Title	Vice President		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Maxell, Ltd.

Application No./Patent No.: 12/845,266 Filed/Issue Date: July 28, 2010

Titled: ELECTRIC CAMERA

Maxell, Ltd., a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: T. NAKANO To: HITACHI CONSUMER ELECTRONICS CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 030648, Frame 0217, or for which a copy thereof is attached.

2. From: HITACHI CONSUMER ELECTRONICS CO., LTD. To: HITACHI MAXELL, LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 033694, Frame 0745, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: HITACHI MAXELL, LTD. To: MAXELL, LTD.

The document was recorded in the United States Patent and Trademark Office at
Reel 045142, Frame 0208, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/John R. Mattingly/	January 25, 2019
Signature	Date
John R. Mattingly	30,293
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	34958269
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	20457
Filer:	John Roberts Mattingly
Filer Authorized By:	
Attorney Docket Number:	500.38315VC3
Receipt Date:	25-JAN-2019
Filing Date:	28-JUL-2010
Time Stamp:	11:23:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Change of Address	9606-04-ChangeofCorrAddress.pdf	78954 5514932e15bac64f1eaac84f1fe3d50793f0fadb	no	2

Warnings:

Information:					
2	Power of Attorney	9606-04-POA.pdf	430920 c9b1c75c90390038df7bf5c7782fdde99361b7c8	no	5
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	9606-04-373.pdf	121438 c2dfcfec2030304c931c54febd8134e539b1f379	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	631312		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/845,266	07/28/2010	Takahiro Nakano	500.38315VC3

CONFIRMATION NO. 9653

24956
MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

IMPROPER CFR REQUEST

OC000000105421981

Date Mailed: 01/30/2019

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Power of Attorney, Claims, Fees, System Limitations, and Miscellaneous

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

- The change of correspondence address submitted 01/25/2019 has not been entered because it was not properly signed.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/

Attorney Docket No. ASA-9606-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

T. NAKANO

Application No.: 12/845,266 ATTENTION

Confirmation No.: 9653 CERTIFICATE OF CORRECTION

Filed: July 28, 2010 BRANCH

U.S. Patent No.: 8,339,493

Issued: December 25, 2012

For: ELECTRIC CAMERA

REQUEST FOR CERTIFICATE OF CORRECTION
APPLICANTS' MISTAKE (37 CFR §1.323)

Director of the U.S. Patent Office
Office of Patent Publications
ATTN: Certificate of Correction Branch
P.O. Box 1450 February 1, 2019
Alexandria, VA 22313-1450

Sir:

Please issue a Certificate of Correction for the above-identified patent to correct the errors listed on the accompanying Form PTO/SB/44.

Pursuant to MPEP §1481, it is submitted that the mistake is either:

(1) of a clerical nature,

(2) of a typographical nature, or

(3) a mistake of minor character.

Furthermore, it is submitted that the correction does not involve changes which would:

(1) constitute new matter, or

(2) require reexamination.

Since the Certificate of Correction is necessitated by a mistake on the part of the Applicants, in accordance with 37 CFR §1.20(a) our Credit Card Payment Form in the amount of $150.00 is attached in payment of the appropriate fee. The Commissioner is hereby authorized to charge additional payment due or to credit any overpayment, to Deposit Account No. 50-1417.

Respectfully submitted,

MATTINGLY & MALUR, P.C.

/John R. Mattingly/
John R. Mattingly
Registration No. 30,293
(703) 684-1120

PTO/SB/44 (09-07)
Approved for use through 01/31/2020. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,339,493

APPLICATION NO.: 12/845,266

ISSUE DATE : December 23, 2012

INVENTOR(S) : T. NAKANO, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column (18): Claim 10, line 7 delete "intervals of a given distance" insert --intervals of a first distance--.

MAILING ADDRESS OF SENDER (Please do not use Customer Number below):

John R. Mattingly
MATTINGLY & MALUR, PC
1800 Diagonal Road – Suite 210

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	35029393
Application Number:	12845266
International Application Number:	
Confirmation Number:	9653
Title of Invention:	ELECTRIC CAMERA
First Named Inventor/Applicant Name:	Takahiro Nakano
Customer Number:	24956
Filer:	John Roberts Mattingly/Krista Hargrove
Filer Authorized By:	John Roberts Mattingly
Attorney Docket Number:	500.38315VC3
Receipt Date:	01-FEB-2019
Filing Date:	28-JUL-2010
Time Stamp:	10:00:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	9606-04-REQUESTCOC.pdf	16842 db175646852c816ff73b6c9b1a5aa4e72d6ad5d4	no	2

Warnings:

Information:					
2	Request for Certificate of Correction	9606-04-COC.pdf	153649 92e2ed55df45edd92b24c78c4c4a2ca5576f5e7d	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	170491	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 02/13/2019

DPOLLARD SALE #00000001 Mailroom Dt: 02/01/2019 501417 12845266
01 FC : 1811 150.00 DA

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/845,266	07/28/2010	Takahiro Nakano	ASA-9606-04

CONFIRMATION NO. 9653

20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
PO Box 472
Upper Marlboro, MD 20773

POWER OF ATTORNEY NOTICE

OC000000106611668

Date Mailed: 03/15/2019

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/25/2019.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tle/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/845,266	07/28/2010	Takahiro Nakano	ASA-9606-04

CONFIRMATION NO. 9653

24956
MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

POA ACCEPTANCE LETTER

OC000000106611756

Date Mailed: 03/15/2019

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/25/2019.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tle/

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Eastern District of Texas, Texarkana Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
5:19-cv-00036	3/15/2019	for the Eastern District of Texas, Texarkana Division

PLAINTIFF	DEFENDANT
Maxell, Ltd.	Apple Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,748,317	6/8/2004	Maxell, Ltd.
2	6,580,999	6/17/2003	Maxell, Ltd.
3	8,339,493	12/25/2012	Maxell, Ltd.
4	7,116,438	10/3/2006	Maxell, Ltd.
5	6,408,193	6/18/2002	Maxell, Ltd.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

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Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/845,266	07/28/2010	Takahiro Nakano	ASA-9606-04	9653

24956 7590 03/23/2020

MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

EXAMINER	
NGUYEN, LUONG TRUNG	

ART UNIT	PAPER NUMBER
2663	

NOTIFICATION DATE	DELIVERY MODE
03/23/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptomail@mmiplaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Patent No.: 8339493
Issue Date: 12/25/2012
Appl. No.: 12/845,266
Filed: 07/28/2010

PART (A) RESPONSE FOR CERTIFICATES OF CORRECTION

This is a decision on the Certificate of Correction request filed 05 March 2020.

The request for issuance of Certificate of Correction for the above-identified correction(s) under the provisions of 37 CFR 1.322 and/or 1.323 is hereby:

(Check one)
☑ Approved ☐ Approved in Part ☐ Denied

Comments: ____

PART (B) PETITION UNDER 37 CFR 1.324 OR 37 CFR 1.48

☐ This is a decision on the petition filed ____ to correct inventorship under 37 CFR 1.324.

☐ This is a decision on the request under 37 CFR 1.48, petition filed ____. In view of the fact that the patent has already issued, the request under 37 CFR 1.48 has been treated as a petition to correct inventorship under 37 CFR 1.324.

The petition is hereby: ☐ Granted ☐ Dismissed

Comment: ____

The patented filed is being forwarded to Certificate of Corrections Branch for issuance of a certificate naming only the actual inventor or inventors.

/TWYLER L HASKINS/
Supervisory Patent Examiner, Art Unit 2698
Technology Center 2600
Phone: (571)272-7406

Certificates of Correction Branch email: CustomerServiceCoC@uspto.gov CoC Central Phone Number: (703) 756-1814

AO 120 (Rev. 08/10)

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☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	11/18/2016	for the Eastern District of Texas, Texarkana Division

PLAINTIFF	DEFENDANT
HITACHI MAXELL, LTD.	ZTE CORP. and ZTE USA, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	5,396,443	3/7/1995	Hitachi Maxell, Ltd.
2	6,748,317	6/8/2004	Hitachi Maxell, Ltd.
3	8,339,493	12/25/2012	Hitachi Maxell, Ltd.
4	8,736,729	5/27/2014	Hitachi Maxell, Ltd.
5	6,408,193	6/18/2002	Hitachi Maxell, Ltd.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
It is ORDERED that the above-entitled and numbered cause of action is DISMISSED WITH PREJUDICE and that each party shall bear their own costs.

CLERK	(BY) DEPUTY CLERK	DATE
David A. O'Toole	slo	3/12/2019

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5:19-cv-00036	3/15/2019	for the Eastern District of Texas, Texarkana Division

PLAINTIFF	DEFENDANT
Maxell, Ltd.	Apple Inc.

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1	6,748,317	6/8/2004	Maxell, Ltd.
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☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
5:19-cv-00036	3/15/2019	for the Eastern District of Texas, Texarkana Division

PLAINTIFF	DEFENDANT
Maxell, Ltd.	Apple Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	10,084,991	9/25/2018	Maxell, Ltd.
2	6,928,306	8/9/2005	Maxell, Ltd.
3	6,329,794	12/11/2001	Maxell, Ltd.
4	10,212,586	2/19/2019	Maxell, Ltd.
5	6,430,498	8/6/2002	Maxell, Ltd.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.	: 8,339,493 B2
APPLICATION NO.	: 12/845266
DATED	: December 25, 2012
INVENTOR(S)	: T. Nakano et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column (18): Claim 10, Line 7 delete "intervals of a given distance" insert --intervals of a first distance--.

Signed and Sealed this
Fifth Day of May, 2020



Andrei Iancu
Director of the United States Patent and Trademark Office



10-08-20

BP/APPA

IPR2020-00597
U.S. Patent 8,339,493 B2

Filed on behalf of Apple Inc.
By: Adam P. Seitz, Reg. No. 52,206
Jennifer C. Bailey, Reg. No. 52,583
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MAXELL, LTD.,
Patent Owner.

Case IPR2020-00597
U.S. Patent No. 8,339,493 B2

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141-142 and 319, 5 U.S.C. §§ 701-706, 28 U.S.C. § 1295(a)(4)(A), and 28 U.S.C. § 1651, and in accordance with 37 C.F.R. §§ 90.2-90.3, and Federal Circuit Rule 15(a)(1), notice is hereby given that Petitioner Apple Inc. appeals to the U.S. Court of Appeals for the Federal Circuit from the Decision Denying Institution of Inter Partes Review entered on September 24, 2020 (Paper 9) in IPR2020-00597, attached as Exhibit A, and all prior and interlocutory rulings related thereto or subsumed therein.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioner states that the issues for appeal include, but are not limited to:

(1) whether the U.S. Patent and Trademark Office (PTO) exceeded its statutory authority and violated the text, structure, and purpose of the Leahy-Smith America Invents Act, 35 U.S.C. §§ 311-319 (AIA), and Administrative Procedure Act, 5 U.S.C. §§ 701-706 (APA), by adopting a rule—and applying that rule to deny institution here—that purports to authorize the Patent Trial and Appeal Board (Board) to deny institution of inter partes review (IPR) based on non-statutory, discretionary factors related to the pendency of parallel patent-infringement litigation;

(2) whether the PTO exceeded its statutory authority and violated the APA by adopting a rule governing institution decisions—and applying the rule to deny

institution here—that incorporates non-statutory, discretionary factors that are arbitrary and capricious;

(3) whether the PTO exceeded its statutory authority and violated the AIA and the APA by adopting a rule to govern all institution decisions—and applying that rule to deny institution here—without following the procedures for notice-and-comment rulemaking; and

(4) whether the court of appeals has jurisdiction over this appeal, notwithstanding 35 U.S.C. § 314(d), because the PTO acted in excess of its statutory authority and outside its statutory limits or because the grounds for attacking the decision to deny institution depend on statutes, including the APA, that are less closely tied to the application and interpretation of statutes related to the decision to initiate IPR.

This Notice of Appeal is timely, having been duly filed 11 days after the date of the Decision Denying Institution of Inter Partes Review.

A copy of this Notice of Appeal is being filed simultaneously with the Board, the Clerk's Office for the United States Court of Appeals for the Federal Circuit, and the Director of the PTO.

Dated: October 6, 2020

Respectfully submitted,

ERISE IP, P.A.

BY: */s/Adam P. Seitz*
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paul.hart@eriseip.com

ATTORNEYS FOR PETITIONER
APPLE INC.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 90.2(a)(1) and 104.2(a), I hereby certify that, in addition to being filed electronically through the Patent Trial and Appeal Board's End to End (PTAB E2E) system, a true and correct original version of the foregoing Petitioner's Notice of Appeal is being filed by Priority Express Mail on this 6th day of October, 2020, with the Director of the U.S. Patent and Trademark Office, at the following address:

Director of the U.S. Patent and Trademark Office
c/o Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Pursuant to 37 C.F.R. 90.2(a)(2) and Federal Circuit Rule 15(a)(1), and Rule 52(a), (e), I hereby certify that a true and correct copy of the foregoing Petitioner's Notice of Appeal is being filed in the United States Court of Appeals for the Federal Circuit using the Court's CM/ECF filing system on this 6th day of October, 2020, and the filing fee is being paid electronically using pay.gov.

I hereby certify that on October 6, 2020, I caused a true and correct copy of the foregoing Petitioner's Notice of Appeal to be served via email on the following counsel for Patent Owner:

Robert G. Pluta (rpluta@mayerbrown.com)

Maxell-Apple-Service@mayerbrown.com

Dated: October 6, 2020

Respectfully submitted,

BY: /s/ *Adam P. Seitz*
Adam P. Seitz, Reg. No. 52,206

COUNSEL FOR PETITIONERS

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MAXELL, LTD.,
Patent Owner.

IPR2020-00597
Patent 8,339,493 B2

Before MINN CHUNG, JASON W. MELVIN, and FREDERICK C. LANEY, *Administrative Patent Judges*.

LANEY, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

EXHIBIT A

I. INTRODUCTION

Petitioner, Apple Inc., filed a Petition for *inter partes* review of claims 1, 3–6, 10, and 11 (the "challenged claims") of U.S. Patent No. 8,339,493 B2 (Ex. 1001, "the '493 patent"). Paper 1 ("Pet."). Patent Owner, Maxell, Ltd., filed a Preliminary Response. Paper 6 ("Prelim. Resp."). Pursuant to our authorization for supplemental briefing, Petitioner filed a Reply to Patent Owner's Preliminary Response, and Patent Owner filed a Sur-reply. Paper 7 ("Pet. Reply"); Paper 8 ("PO Sur-reply"); *see* Ex. 1056 (authorizing reply and sur-reply).

Under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if "the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). The Board, however, has discretion to deny a petition even when a petitioner meets that threshold. *Id.*; *see, e.g.*, *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential, designated May 7, 2019) ("*NHK*").

Having considered the parties' submissions, and for the reasons explained below, we exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review.

EXHIBIT A

II. BACKGROUND

A. Related Matters

The parties identify the following pending district court proceeding related to the '493 patent: *Maxell, Ltd. v. Apple Inc.*, No. 5:19-cv-00036 (E.D. Tex., filed Mar. 15, 2019) ("the underlying litigation"). Pet. 81; Paper 5, 1 (Patent Owner's Mandatory Notices).

B. Overview of the '493 Patent

The '493 patent, is titled "Electric Camera." Ex. 1001, code (54). It issued on December 25, 2012, based on an application filed July 28, 2010. *Id.* at code (22), (45). It claims priority as a continuation of a U.S. application filed September 12, 2003, which in turn claims priority as a division of a U.S. application filed March 8, 2000. *Id.* at code (60). Priority is also claimed to a Japanese patent application filed January 11, 2000. *Id.* at code (30), 1:6–14.

The '493 patent relates to "video cameras, camcorders, digital still cameras and others using a solid-state image sensing device, and more particularly to an electric camera using a solid-state image sensing device with a large number of pixels." *Id.* at 2:57–61. An object of the invention is to provide an electric camera "which uses an image sensing device with a sufficient number of pixels for still images and enables the taking of highly detailed still images and a moving video taking with reduced image quality degradation without increasing circuitry such as field memory." *Id.* at 3:8–13. "It is also an object of the present invention to provide an electric camera that can also realize the image stabilizing function." *Id.* at 3:13–15.

EXHIBIT A

C. Illustrative Claim

Challenged claims 1, 5, and 10 are independent. Challenged claims 3 and 4 depend directly from claim 1, challenged claim 6 depends directly from claim 5, and challenged claim 11 depends directly from claim 10. Claims 5 and 6 are illustrative of the claimed subject matter. Claims 5 and 6 recite:

> 5. An electric camera comprising:
> an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines;
> a signal processing unit that generates image signals by processing the output signals of the image sensing device; and
> a display unit with a display screen, that displays an image corresponding to the image signals;
> wherein when recording an image in a static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines;
> wherein when monitoring the image in the static image mode, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance; and
> wherein when recording the image in a moving video mode, the signal processing unit generates the image signals by using a portion of, or the entirely of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance, where the second distance is different from the first distance.
>
> 6. An electric camera according to the claim 5, further comprising:
> an image-instability detector which detects an image-instability of the electric camera; and

EXHIBIT A

wherein when recording in the moving video mode, in order to correct the image-instability, the signal processing unit generates the image signals by changing the pixel lines used, and the portion of the pixel lines used, according to an amount of image-instability detected by the instability detector.

Ex. 1001, 16:32–17:3.

D. Prior Art and Declaration Evidence

Petitioner cites the following references in its challenge to patentability:

Casio LCD Digital Camera QV-8000SX User's Guide (Ex. 1004, "Casio");

U.S. Patent No. 7,903,162 B2, issued March 8, 2011 (Ex. 1005, "Juen");

U.S. Patent No. 5,502,483, issued March 26, 1996 (Ex. 1006, "Takase"); and

U.S. Patent No. 5,444,482, issued August 22, 1995 (Ex. 1008, "Misawa").

Petitioner supports its challenge with a declaration from Dr. Jeffrey J. Rodriguez (Ex. 1003).

E. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following ground (Pet. 4):

Claims Challenged	**35 U.S.C. §**	**References**
1, 3, 5, and 10	103(a)[1]	Casio, Juen

[1] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. §103 effective March 16, 2013. Because the

EXHIBIT A

Claims Challenged	35 U.S.C. §	References
4	103(a)	Casio, Juen, Takase
6 and 11	103(a)	Casio, Juen, Misawa

III. ANALYSIS

Patent Owner contends we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review due to the advanced stage of the underlying litigation in the United States District Court for the Eastern District of Texas. Prelim. Resp. 2–28; PO Sur-reply 1–11. According to Patent Owner, instituting an *inter partes* review "would needlessly duplicate" the district court action and "unnecessarily waste the Board's resources." Prelim. Resp. 4 (citing *NHK*, Paper 8 at 20 (denying institution)).

After Patent Owner filed its Preliminary Response, we authorized the parties to submit supplemental briefing on the issue of discretionary denial under 35 U.S.C. § 314(a). Ex. 1056, 1. We specifically authorized the parties to address the factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential, designated May 5, 2020) ("*Fintiv*"). *Id.* *Fintiv* provides several factors that balance considerations of system efficiency, fairness, and patent quality when a patent owner raises an argument for discretionary denial due to the advanced state of a parallel proceeding. *Fintiv*, Paper 11 at 5–6. These factors are:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;

'493 patent has an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

EXHIBIT A

2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;

3. investment in the parallel proceeding by the court and the parties;

4. overlap between issues raised in the petition and in the parallel proceeding;

5. whether the petitioner and the defendant in the parallel proceeding are the same party; and

6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id.

We now consider these factors to determine whether we should exercise discretion to deny institution under 35 U.S.C. § 314(a). "[I]n evaluating the factors, the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

A. Fintiv Factor 1: Stay in the Underlying Litigation

Petitioner moved for a stay in the underlying litigation, but the district court denied the motion. *See* Pet. Reply 1; PO Sur-reply 2; Ex. 1052. Among other reasons, the court stated "[t]he case is not in its infancy and is far enough along that a stay would interfere with ongoing proceedings." Ex. 1052, 4. Notably, the court denied the motion without prejudice. *Id.* at 6. Although the court stated that "[t]he late stage of the proceedings will certainly weigh against granting a stay" if Petitioner were to file a renewed motion for a stay, the court also stated it could not "say now that the late stage would necessarily outweigh the potential simplification of issues following institution decisions" in this and other *inter partes* review proceedings. *Id.* Given the court's apparent willingness to reconsider a motion to stay if an institution decision simplified issues for trial, but also

considering the late stage of the district court proceeding, with trial scheduled to begin in less than three months, we view the first *Fintiv* factor as neutral in determining whether to exercise discretion to deny institution.

B. Fintiv Factor 2: Trial Date in the Underlying Litigation

The district court trial date, previously set for October 26, 2020, has been reset for December 7, 2020. Ex. 3001 (August 10, 2020 Order resetting trial date); *see* PO Sur-reply 2–3. A trial beginning this December would be completed about nine months before a final written decision would be due in this proceeding. Petitioner does not directly address factor 2 in its supplemental briefing. *See* Pet. Reply 1–7.

Petitioner, however, does suggest that the COVID-19 pandemic may affect the trial schedule, and indeed the trial has been delayed by six weeks due to the effects of COVID-19. Pet. Reply 6–7; Ex. 3001, 1. Patent Owner counters by citing an order by another judge in the Eastern District of Texas for a different case involving the Petitioner that denied its request to continue a patent trial scheduled for August 2020 because of concerns with COVID-19. PO Sur-reply 3 (citing Ex. 2031). In addition, Patent Owner argues, even if the trial date were delayed by three to five months, the trial still would precede a final written decision by several months. *Id.* Although we consider further delays due to the COVID-19 pandemic to be a real possibility despite the trial court's recent order resetting the trial date for December 7, 2020, a delayed trial still seems likely to precede a final written decision in this proceeding, which would be due in September 2021. This factor, therefore, favors the exercise of discretionary denial.

EXHIBIT A

C. Fintiv Factor 3: Investment by the Court and the Parties in the Underlying Litigation

Petitioner does not address factor 3 in its supplemental briefing, but instead argues that its Petition was not purposefully delayed. *See* Pet. Reply 2–3. Thus, Petitioner notably does not dispute Patent Owner's contention that significant time and resources have already been used by the district court and the parties in preparation for the upcoming December trial. PO Sur-reply 3; *see* Prelim. Resp. 13–14.

Regardless of Petitioner's diligence to file the Petition, it appears undisputed that the court and the parties have invested significant work related to invalidity in preparation for trial. Because some of this invested effort, including claim construction and expert discovery, likely has relevance to issues that would arise in this proceeding, this factor favors the exercise of discretionary denial in this case to prevent duplication of work on similar issues by the Board and the district court, and by the parties in multiple forums.

D. Fintiv Factor 4: Overlap Between Issues Raised in the Petition and Underlying Litigation

Petitioner contends "the subject matter that the Board will consider does not overlap with the [underlying] litigation." Pet. Reply 3. Petitioner notes that the Petition challenges claims 1, 3–6, 10, and 11, whereas only claims 5 and 6 are at issue in the underlying litigation, and argues that claim 1 has a materially different scope than those in the underlying litigation. *Id.*

Petitioner asserts also that the Petition presents the unique issue of whether "Juen disclose[s] mixing and culling." *Id.* In particular, for the element "signal processing unit generates the image signals by using pixel

EXHIBIT A

lines that have been mixed or culled from the N number of vertically arranged pixel lines" of claim 5, Petitioner contends that it only relies on Juen to disclose this limitation in the Petition, whereas only Sony is relied upon to disclose this limitation in the litigation. *Id.* at 3–4. Petitioner argues that although Casio and Sony disclose similar technology they are still "two different cameras from two different manufactures" that "invalidate [the challenged claim] limitations in different ways, with different teachings, and different motivations to combine." *Id.* at 4. As support, Petitioner points out that in these proceedings it is "limited to a user manual" for Casio and, for Sony in the litigation, Petitioner is able to present "the Sony device itself and a supporting body of evidence outlining the operation of that device that includes the printed manual, a service manual, advertisements, microscopic images of the sensors, tear down testing, Sony's employees, and other evidence that is unavailable in the IPR." *Id.*

Patent Owner contends that claims 1, 3–6, 10, and 11 were asserted against Petitioner in the underlying litigation at the time the Petition was filed and, thus, the "proper time at which to evaluate facts with respect to *Fintiv* Factor 4 is the time the Petition is filed." PO Sur-reply 5. Nevertheless, Patent Owner argues that Petitioner's suggestion that the scope of claim 1 is materially different than claim 5 is disingenuous because Petitioner's invalidity contentions regarding claim 5 "points back to its [c]laim 1 analysis for every limitation of [c]laim 5." *Id.* (citing Ex. 2009, 153–154; Ex. 2010, 116–119). Moreover, Patent Owner argues that the Petition itself undermines Petitioner's suggestion claim 1 is "materially different" than claim 5 because the analysis presented for claim 5 likewise consists largely of referencing the analysis presented for claim 1. *Id.* (citing Pet. 57–59).

EXHIBIT A

Patent Owner disputes Petitioner's contention that Juen is only used in this proceeding to disclose the mixing and culling limitation. *Id.* at 5–6. Patent Owner contends the opposite is true because Petitioner uses Juen the same way in the underlying litigation to show the mixing and culling limitation for video recording and monitoring. *Id.* at 6 (citing Ex. 1058, 104–105, 107)[2]. Patent Owner argues additionally that Petitioner's "effort to distinguish the Casio and Sony references fares no better" because Petitioner "has not pointed out a *single* difference between the Sony and Casio devices (or the manuals) related to purported application to the challenged claims." *Id.* at 6–9. Lastly, Patent Owner notes that Petitioner "ignores that it uses Misawa both in the Petition and the [underlying] litigation for the image-instability correction features of Claim 6." *Id.* at 6 (citing Pet. 74–78; Ex. 1058, 82–88).

After considering the parties' arguments and the record before us, we determine that substantial overlap exists between the issues raised in the Petition and the underlying litigation.

First, regarding the difference between the challenged claims in this proceeding (i.e., claims 1, 3–6, 10, 11) and those claims that the parties have elected to pursue during the upcoming trial (i.e., claims 5, 6), Petitioner only suggests claim 1 "has a materially different scope" than the ones in this proceeding (Pet. 3), but Patent Owner correctly notes that this contention is undermined by the fact that Petitioner cross-references its unpatentability

[2] For Exhibit 1058, Patent Owner appears to cite to the page number of the original document rather than the exhibit page number added by Petitioner (i.e., the page number added at the lower right corner). Our subsequent reference to Exhibit 1058 refers to the added exhibit page number.

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analysis presented for claim 1 extensively in the Petition to also show the unpatentability of claim 5. *See* Pet. 57–59. Similarly, Petitioner's invalidity contentions in the underlying litigation likewise rely *exclusively* on the analysis presented for claim 1 to support the contentions for claim 5. *See* Ex. 2009, 153–154; Ex. 2010, 116–119. Furthermore, we note that both parties agree that the '493 patent claims priority to January 11, 2000, which means that the '493 patent has expired[3] and that the unelected claims can no longer be asserted against future products of the Petitioner (or anyone else). *See* 35 U.S.C. § 154(a)(2). Thus, although the challenged claims asserted in this proceeding are not identical to those that the parties have elected to pursue at trial in the underlying litigation, we do not find this difference to be meaningful in this case.

Second, Petitioner's assertion that the issue of whether Juen discloses mixing and culling is *unique* to this proceeding lacks merit. An expert report provided by Petitioner in the underlying litigation indicates that Petitioner intends to offer testimony that Juen discloses mixing and culling to support its invalidity contentions. *See* Ex. 1058, 107–108, 110–111. We have considered the expert's analysis and evidence offered in the report for the underlying litigation and find it to be substantively similar to the analysis and evidence being offered in this proceeding on this issue. Therefore, contrary to Petitioner's assertion that Juen's disclosure of mixing and culling presents *unique* subject matter for the Board to consider in this proceeding, we find this subject matter to be exemplary of the kind of issues that "would

[3] Additionally, a terminal disclaimer was filed disclaiming the terminal part of the statutory term granted to the '493 patent that may extend beyond the expiration date of prior Patent No. 6,765,616. *See* Ex. 1002, 79.

EXHIBIT A

needlessly duplicate" the district court action and "unnecessarily waste the Board's resources." *NHK*, Paper 8 at 20.

Third, although Sony and Casio are two different cameras from two different manufactures, we do not find any relevant difference in their structures and operations that are relied upon to show the unpatentability of the challenged claims. For example, for both Sony and Casio, Petitioner alleges each discloses: (1) a charge-coupled device ("CCD") that can produce signals that are used to create an image size of 1280 x 960 pixels, which is relied upon to show the recited "image sensing device" (Pet. 22, 24; Ex. 1058, 59); (2) the ability to convert or encode images to JPEG format, which is relied upon to show the recited "signal processing unit" (Pet. 28; Ex. 1058, 67); (3) a LCD screen, which is relied upon to show the recited "display unit" (Pet. 32; Ex. 1058, 67–68); (4) the ability to use the monitor as a "viewfinder" to display images prior to recording, which is relied upon to show the recited "monitoring in a static image mode" (Pet. 34–37; Ex. 1058, 77–78); (5) the ability to display on the monitor an image that has a resolution lower than the image subsequently recorded, which is relied upon to show the recited mixing or culling at a first interval (Pet. 37–40, 43–44; Ex. 1058, 77–80); and (6) the ability to record movies in 320 x 240 pixel AVI format, which is relied upon to show the recited mixing or culling at a second interval (Pet. 44–47; Ex. 1058, 81–84). While Sony and Casio may disclose different cameras from different manufactures, the record before us shows that Petitioner is relying on structural and operational components that both devices share. In other words, the relevant structures and operations in Sony and Casio that Petitioner relies on in the underlying litigation and in this proceeding to show either invalidity or unpatentability

EXHIBIT A

are substantially the same despite being incorporated into two different devices.

Consistent with our understanding that Sony and Casio are substantially the same, we note that the district court in the underlying litigation likewise found "the Casio Camera seems cumulative to the already disclosed references" and the Sony Camera had already been disclosed at the time of that ruling. *See* Ex. 2006, 6; Ex. 2003, 36–38. Petitioner's statements to the contrary that Sony and Casio invalidate the challenged claims in different ways is notably conclusory without any basis provided to substantiate the position. *See* Pet. Reply 4.

This fourth *Fintiv* factor involves consideration of inefficiency concerns and the possibility of conflicting decisions. *Fintiv*, Paper 11 at 12. Therefore, "if the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Id.* As discussed, there is substantial overlap between the grounds asserted in the underlying litigation and those asserted in the Petition, so that institution of an *inter partes* review likely will result in duplicative efforts by the Board and the trial court as to how the references teach limitations of the challenged claims. Further, accepting Petitioner's representation that it has substantially more evidence regarding Sony's structure and operation in the underlying litigation than it has of Casio's structure and operation in this proceeding, we find that efficiency and fairness tips toward giving way to the underlying litigation that is set to begin trial in less than three months. For these reasons, we determine that this factor on balance favors the exercise of discretionary denial.

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E. Fintiv Factor 5: Whether Petitioner is the Defendant in the Underlying Litigation

It is undisputable that Petitioner here is the defendant in the underlying litigation. *See* Ex. 1010. Because the trial court may reach the overlapping issues before the Board would in a final written decision, this factor favors the exercise of discretionary denial in this case. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, 15 (PTAB May 13, 2020) (informative, designated July 13, 2020) (determining factor 5 weighs in favor of discretionary denial when the parallel proceeding involves the same parties and the trial court may reach overlapping issues before the Board would in a final written decision).

F. Fintiv Factor 6: Other Considerations

Under the sixth *Fintiv* factor, which takes into account any other relevant circumstances, Patent Owner argues that Petitioner unreasonably delayed in filing the Petition. Prelim. Resp. 13–22. Petitioner explains that it needed time to locate relevant prior art and prepare petitions for *inter partes* review. Pet. Reply 2–3. Having considered the particular factual circumstances of this case, we do not consider Petitioner's filing untimely.

Petitioner also presents extensive policy arguments against the Board's application of *Fintiv* and *NHK* in determining whether to exercise discretion to deny institution under 35 U.S.C. § 314(a). Pet. Reply 8–11. We need not address these arguments, as the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office has designated *Fintiv* and *NHK* as precedential decisions of the Board.

As noted in *Fintiv*, a balanced assessment of factors may include consideration of the merits. *Fintiv*, Paper 11 at 14–15. Although we do not

EXHIBIT A

undertake here a full analysis of the merits, our initial inspection of the record and the parties' arguments suggests a potential deficiency in Petitioner's evidence supporting its contention that Casio and Juen disclose using different intervals when mixing or culling signal charges accumulated in the vertically arranged pixel lines based on whether the electric camera is monitoring in a static image mode or recording in a moving video mode. *See* Pet. 34–47; Prelim. Resp. 61–63. In a balanced assessment of the relevant evidence of record, and in view of the possible weakness in Petitioner's showing on the present record, this factor is neutral or weighs slightly in favor of discretionary denial.

G. Conclusion

Based on the particular circumstances of this case, we determine that instituting an *inter partes* review would be an inefficient use of Board resources. As discussed above, the trial in the underlying litigation is currently scheduled to begin in less than three months and may conclude several months before we would reach a final decision in this proceeding. The district court and the parties have expended effort in preparing for the upcoming trial that will address issues that substantially overlap with those raised in the Petition. Further, based on our preliminary assessment of the merits, we have identified a potential deficiency in Petitioner's evidence regarding the use of different intervals when mixing or culling signal charges accumulated in the vertically arranged pixel lines based on whether the electric camera is monitoring in a static image mode or recording in a moving video mode. All of the *Fintiv* factors discussed above either weigh in favor of exercising discretion to deny institution or are neutral. On balance, after a holistic consideration of the relevant facts, we conclude that

EXHIBIT A

efficiency and integrity of the system are best served by denying institution. Thus, we exercise our discretion under § 314(a) to deny institution of *inter partes* review.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is *denied*; and

FURTHER ORDERED that no *inter partes* review is instituted.

EXHIBIT A

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EXHIBIT 1005

US007903162B2

(12) **United States Patent**
Juen

(10) **Patent No.: US 7,903,162 B2**
(45) **Date of Patent: Mar. 8, 2011**

(54) **ELECTRONIC CAMERA THAT DISPLAY INFORMATION REPRESENTATIVE OF ITS SELECTED MODE**

(75) Inventor: **Masahiro Juen**, Kanagawa-ken (JP)

(73) Assignee: **Nikon Corporation**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/075,333**

(22) Filed: **Mar. 9, 2005**

(65) **Prior Publication Data**

US 2005/0146623 A1 Jul. 7, 2005

Related U.S. Application Data

(63) Continuation of application No. 09/951,417, filed on Sep. 14, 2001, now abandoned, which is a continuation of application No. 08/937,805, filed on Sep. 25, 1997, now abandoned.

(60) Provisional application No. 60/040,922, filed on Mar. 27, 1997.

(30) **Foreign Application Priority Data**

Sep. 25, 1996 (JP) 8-253343

(51) **Int. Cl.**
H04N 5/222 (2006.01)

(52) **U.S. Cl.** **348/333.01**; 348/333.02

(58) **Field of Classification Search** 348/220.1, 348/229.1, 333.01, 333.02

See application file for complete search history.

(56) **References Cited**

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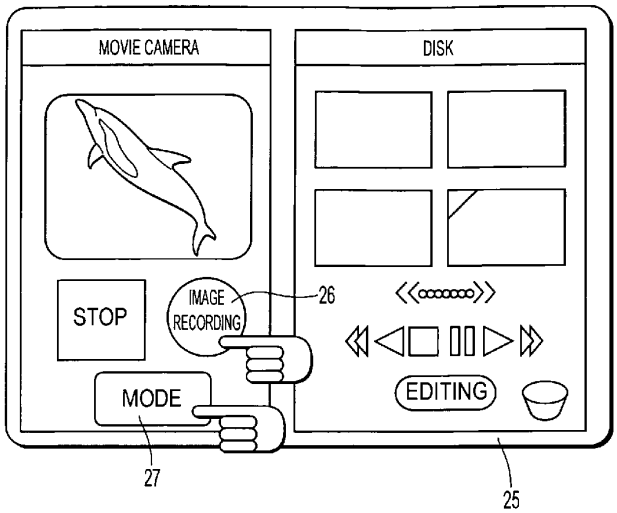
* cited by examiner

Primary Examiner — Kelly L Jerabek
(74) *Attorney, Agent, or Firm* — Oliff & Berridge, PLC

(57) **ABSTRACT**

An electronic camera is used with a display screen and includes an imaging device, a pixel density converter, a moving image recording device and a still image recording device. The imaging device images an object and converts the imaged object to image information. The pixel density converter converts the image information converted by the imaging device to a pixel density suitable for a scan format of the display screen. The moving image recording device successively retrieves the image information from the pixel density converter and records the image information in the recording medium as a series of moving images. The still image recording device retrieves the image information converted by the imaging device and records the image information in the recording medium as a still image.

8 Claims, 17 Drawing Sheets



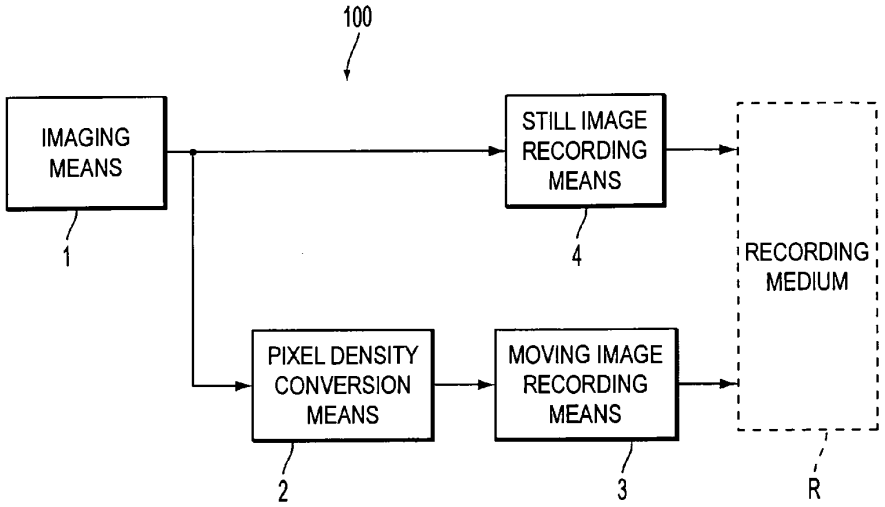

100
IMAGING MEANS
1
STILL IMAGE RECORDING MEANS
4
RECORDING MEDIUM
PIXEL DENSITY CONVERSION MEANS
2
MOVING IMAGE RECORDING MEANS
3
R

FIG. 1

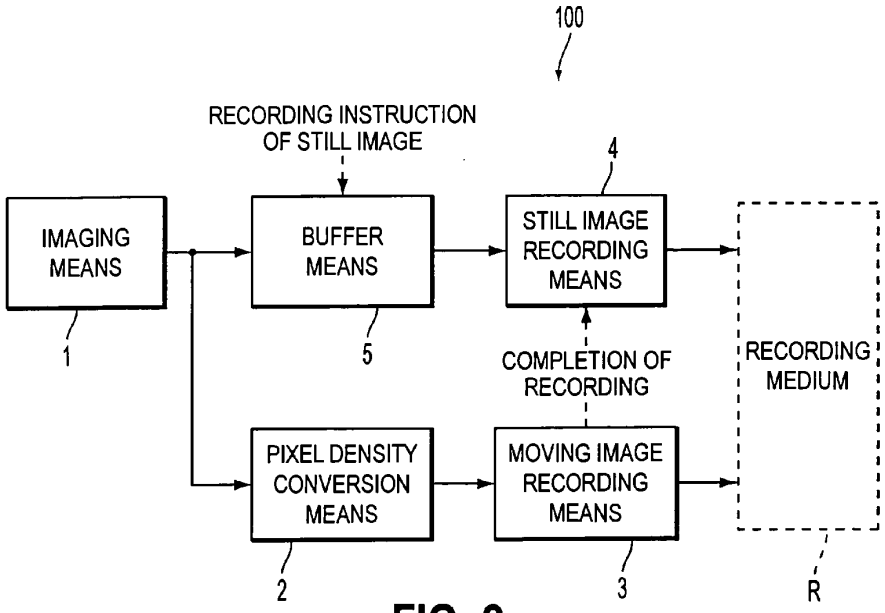

100
RECORDING INSTRUCTION OF STILL IMAGE
4
IMAGING MEANS
1
BUFFER MEANS
5
STILL IMAGE RECORDING MEANS
COMPLETION OF RECORDING
RECORDING MEDIUM
PIXEL DENSITY CONVERSION MEANS
2
MOVING IMAGE RECORDING MEANS
3
R

FIG. 2

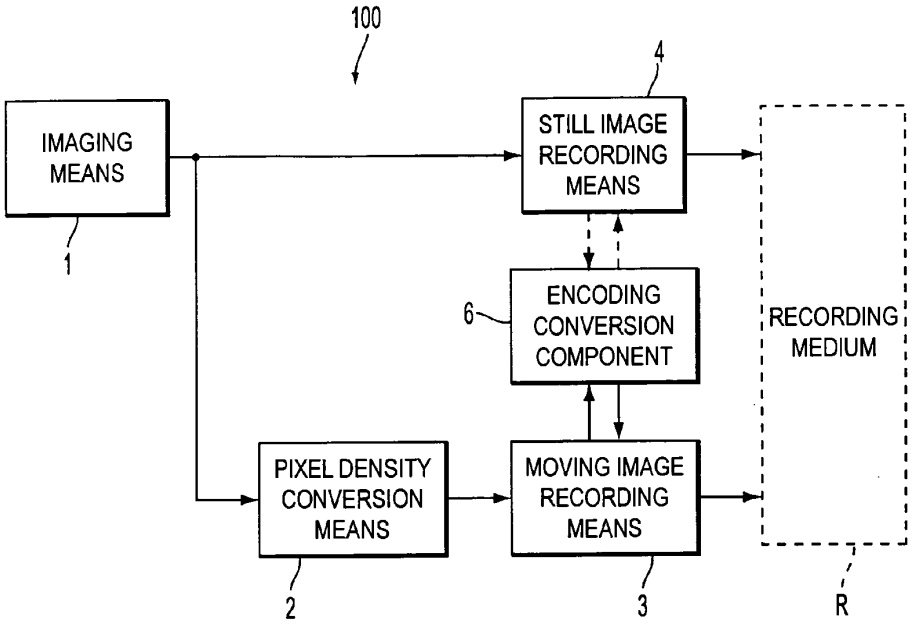

100
4
IMAGING MEANS
STILL IMAGE RECORDING MEANS
1
6
ENCODING CONVERSION COMPONENT
RECORDING MEDIUM
PIXEL DENSITY CONVERSION MEANS
MOVING IMAGE RECORDING MEANS
2
3
R

FIG. 3

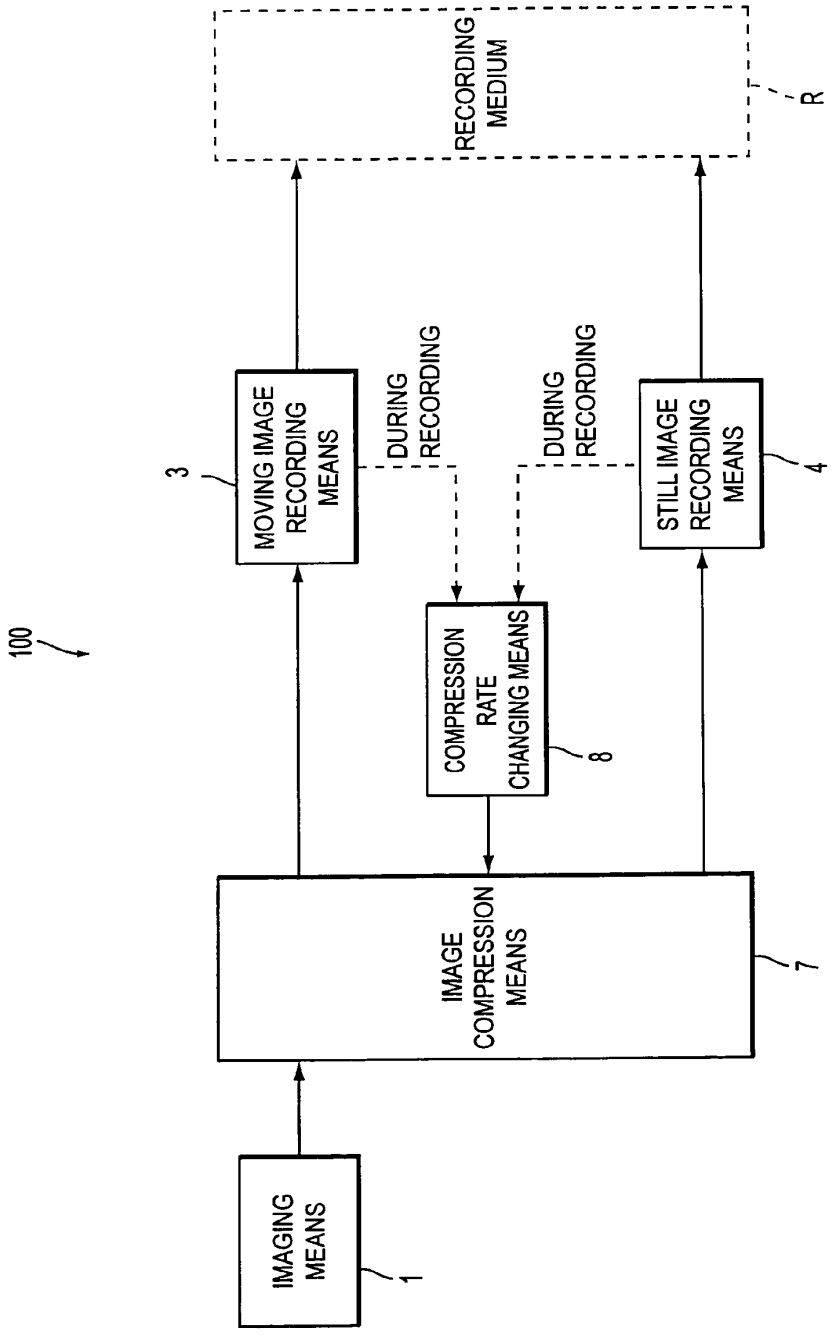

100
RECORDING MEDIUM
R
MOVING IMAGE RECORDING MEANS
3
DURING RECORDING
DURING RECORDING
STILL IMAGE RECORDING MEANS
4
COMPRESSION RATE CHANGING MEANS
8
IMAGE COMPRESSION MEANS
7
IMAGING MEANS
1

FIG. 4

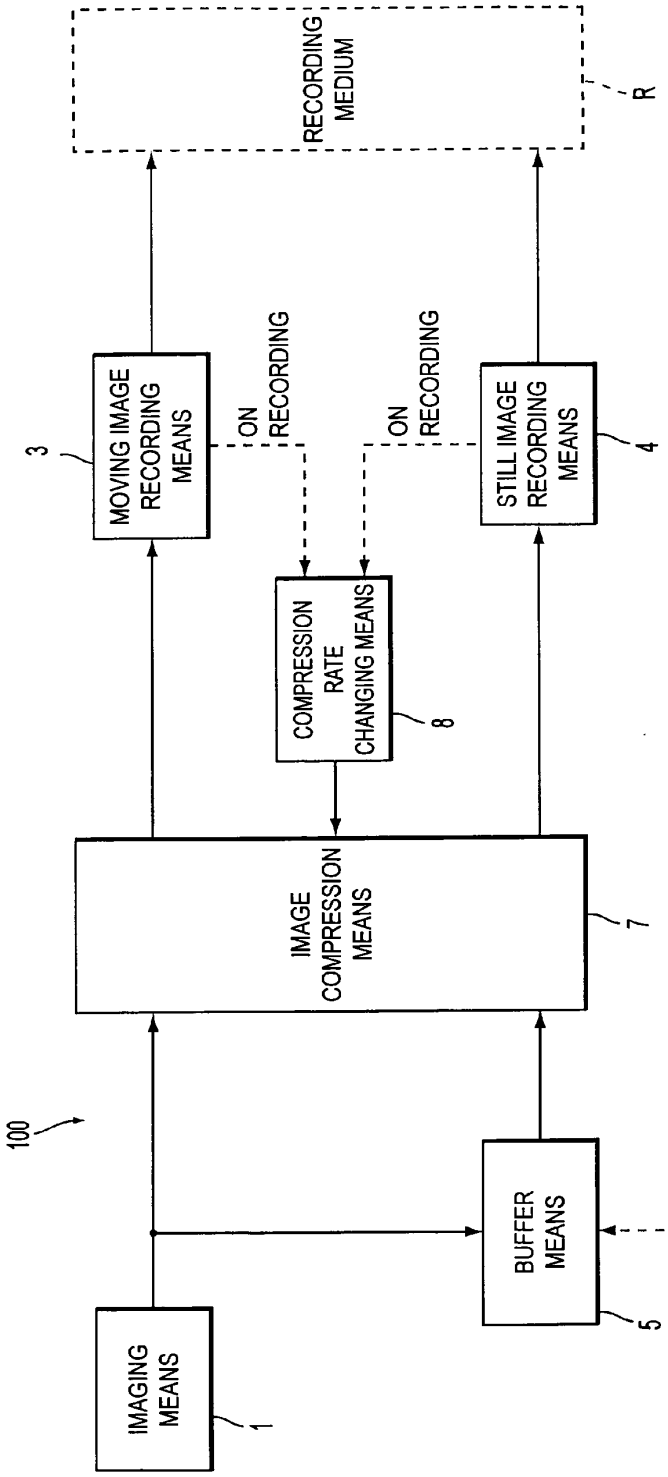

RECORDING MEDIUM
R
MOVING IMAGE RECORDING MEANS
3
ON RECORDING
ON RECORDING
STILL IMAGE RECORDING MEANS
4
COMPRESSION RATE CHANGING MEANS
8
IMAGE COMPRESSION MEANS
7
100
BUFFER MEANS
5
COMMAND FOR RECORDING STILL IMAGES
IMAGING MEANS
1

FIG. 5

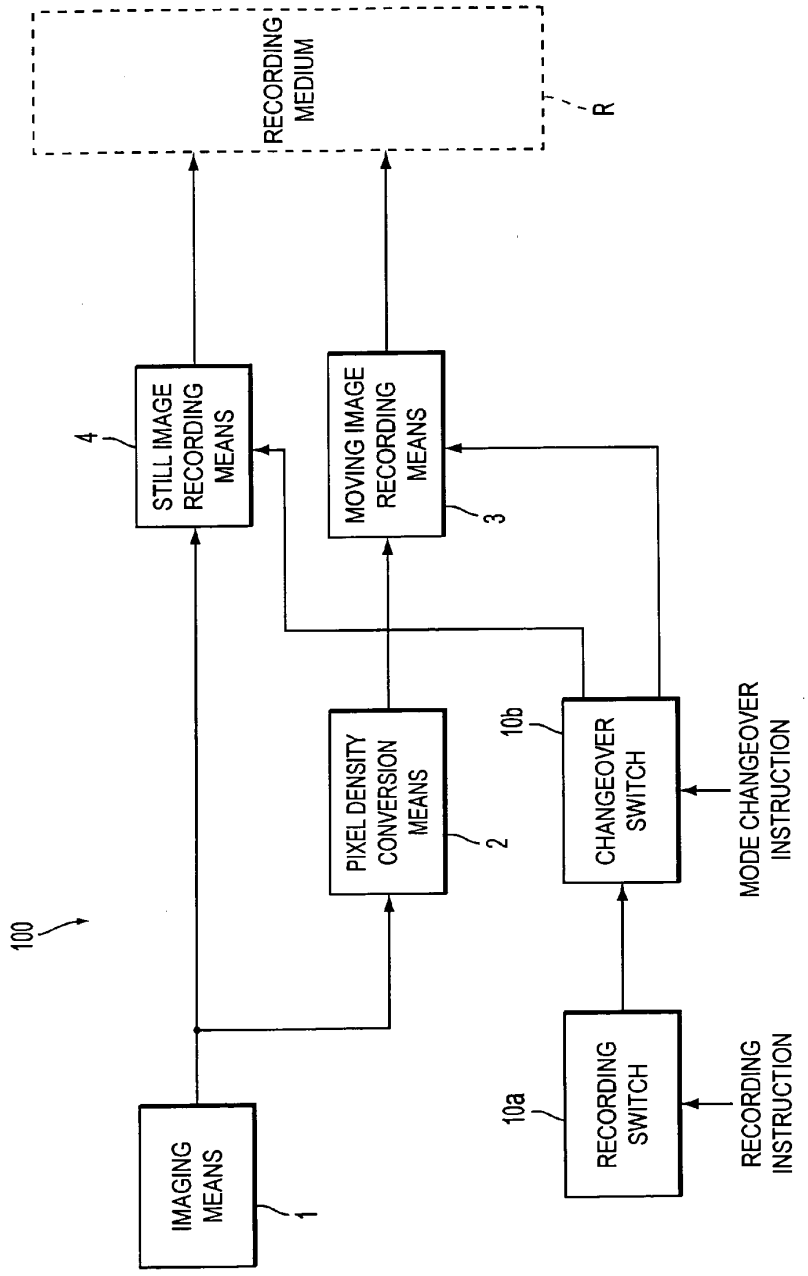

RECORDING MEDIUM
R
STILL IMAGE RECORDING MEANS
4
MOVING IMAGE RECORDING MEANS
3
PIXEL DENSITY CONVERSION MEANS
2
CHANGEOVER SWITCH
10b
MODE CHANGEOVER INSTRUCTION
RECORDING SWITCH
10a
RECORDING INSTRUCTION
IMAGING MEANS
1
100

FIG. 6

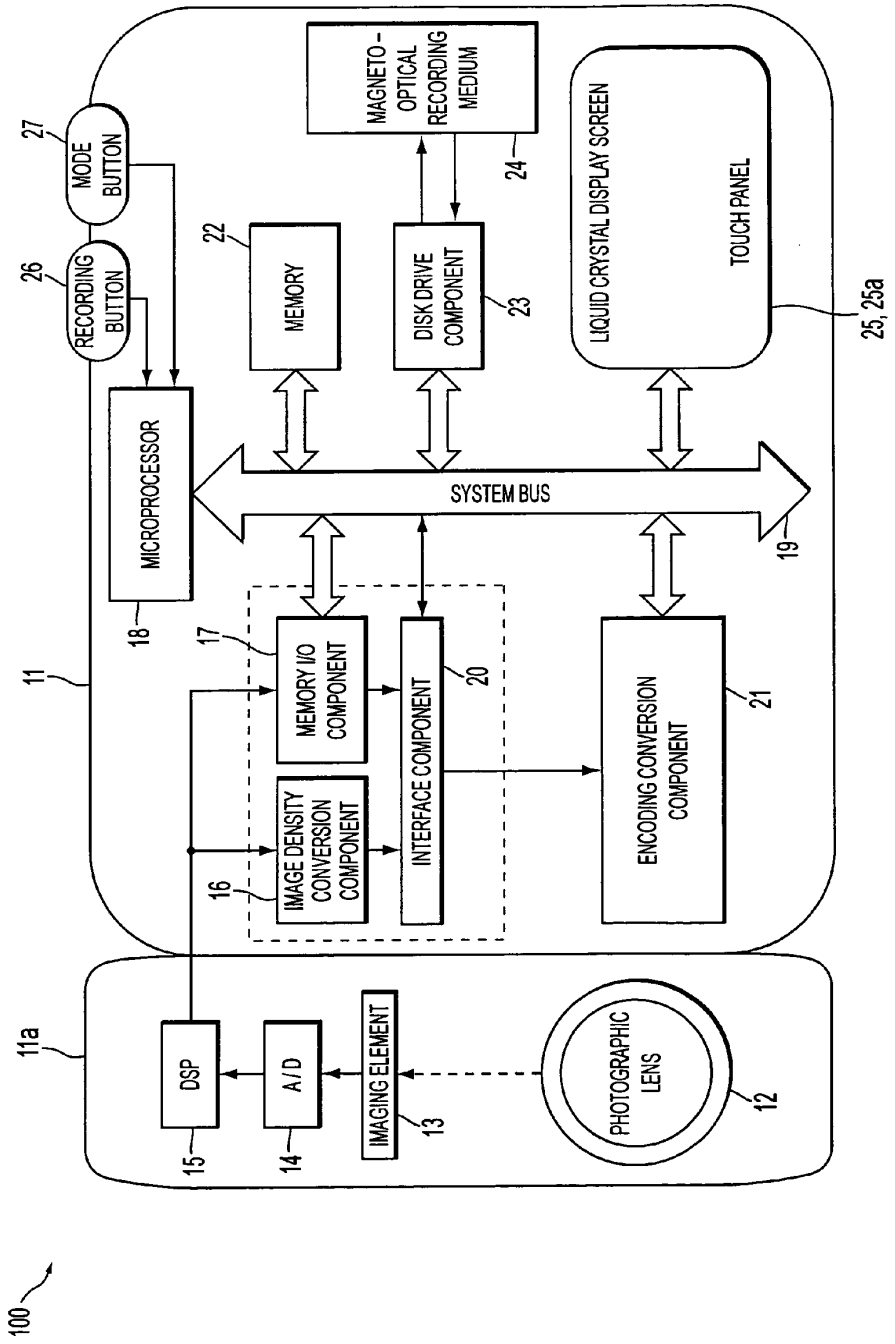

100
11
11a
MODE BUTTON
27
RECORDING BUTTON
26
MICROPROCESSOR
18
MEMORY
22
DISK DRIVE COMPONENT
23
MAGNETO-OPTICAL RECORDING MEDIUM
24
LIQUID CRYSTAL DISPLAY SCREEN
TOUCH PANEL
25, 25a
SYSTEM BUS
19
MEMORY I/O COMPONENT
17
IMAGE DENSITY CONVERSION COMPONENT
16
INTERFACE COMPONENT
20
ENCODING CONVERSION COMPONENT
21
DSP
15
A/D
14
IMAGING ELEMENT
13
PHOTOGRAPHIC LENS
12

FIG. 7

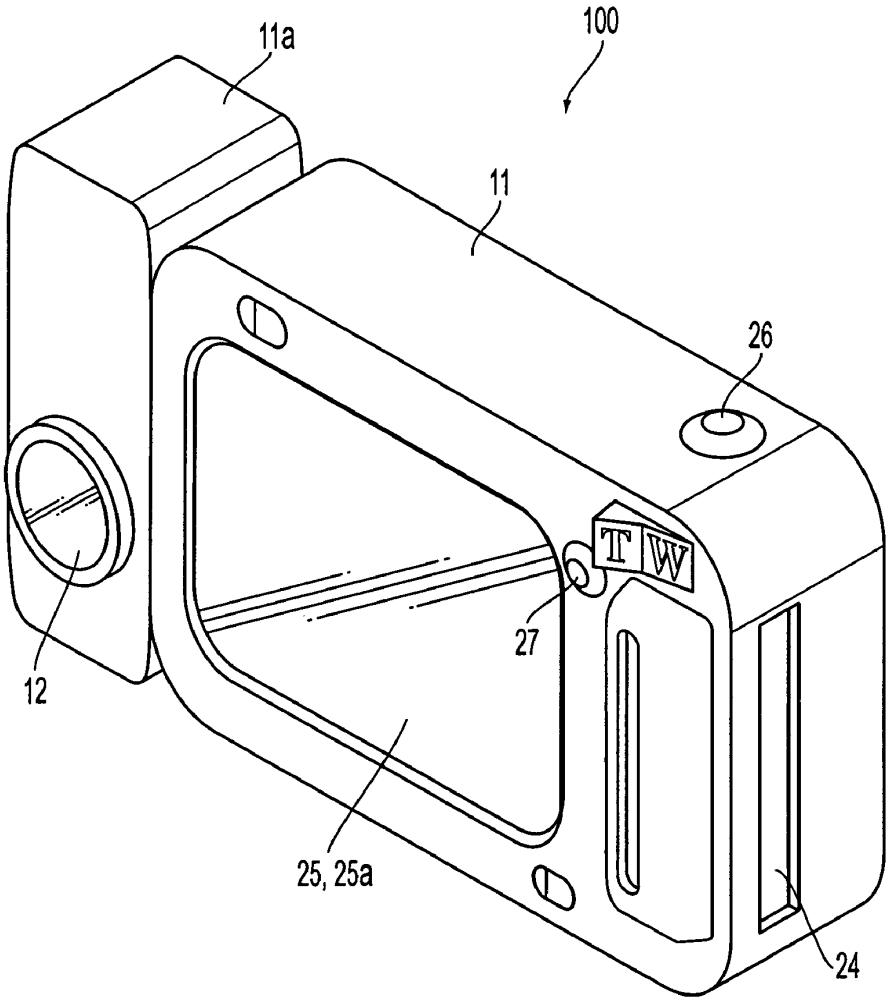


FIG. 8

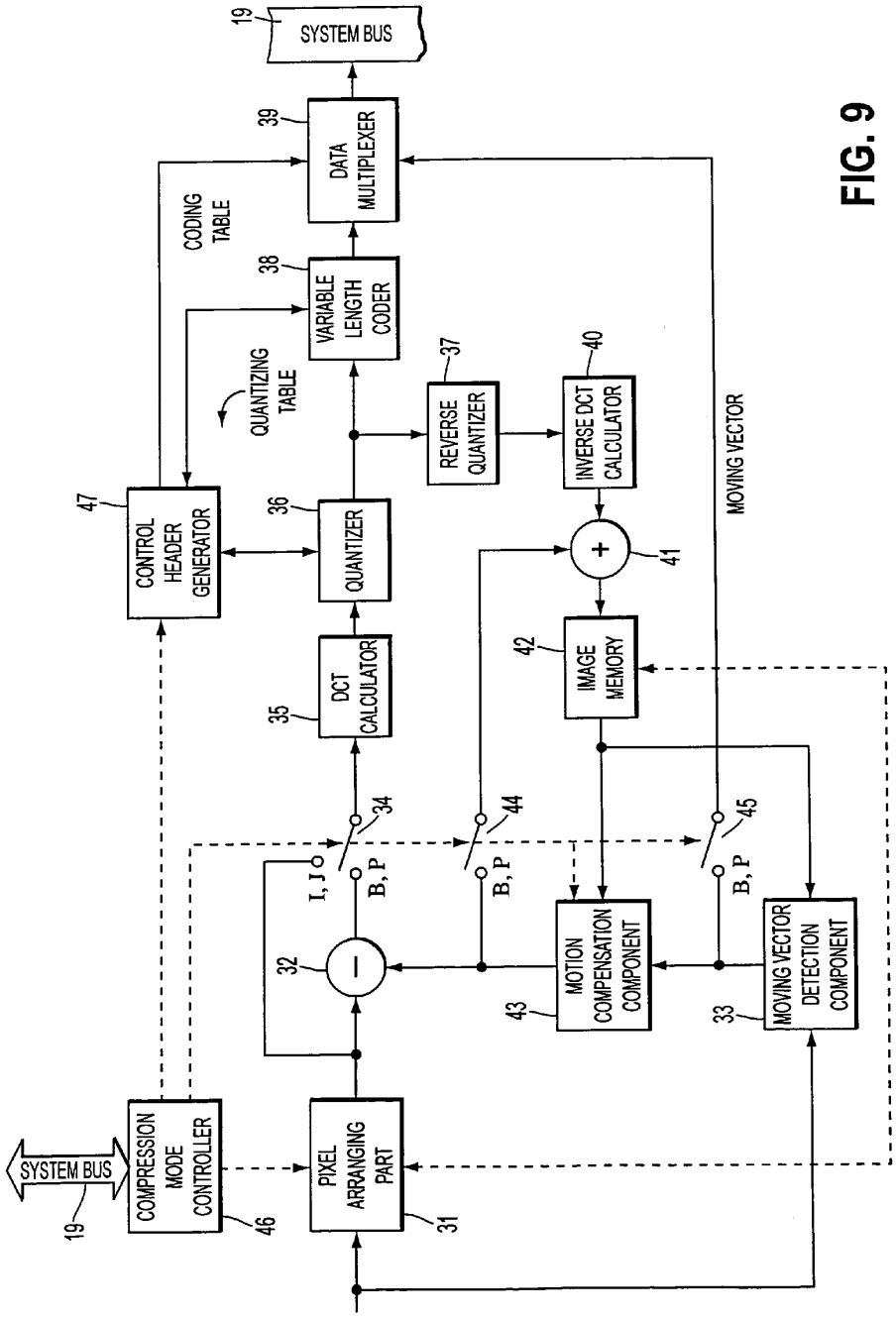

19
SYSTEM BUS
39
DATA MULTIPLEXER
CODING TABLE
38
VARIABLE LENGTH CODER
QUANTIZING TABLE
37
REVERSE QUANTIZER
40
INVERSE DCT CALCULATOR
MOVING VECTOR
47
CONTROL HEADER GENERATOR
36
QUANTIZER
41
35
DCT CALCULATOR
42
IMAGE MEMORY
34
44
45
I, J
B, P
B, P
B, P
32
43
MOTION COMPENSATION COMPONENT
33
MOVING VECTOR DETECTION COMPONENT
SYSTEM BUS
19
COMPRESSION MODE CONTROLLER
46
PIXEL ARRANGING PART
31

FIG. 9

FIG. 10
FIG. 10(A)
FIG. 10(B)

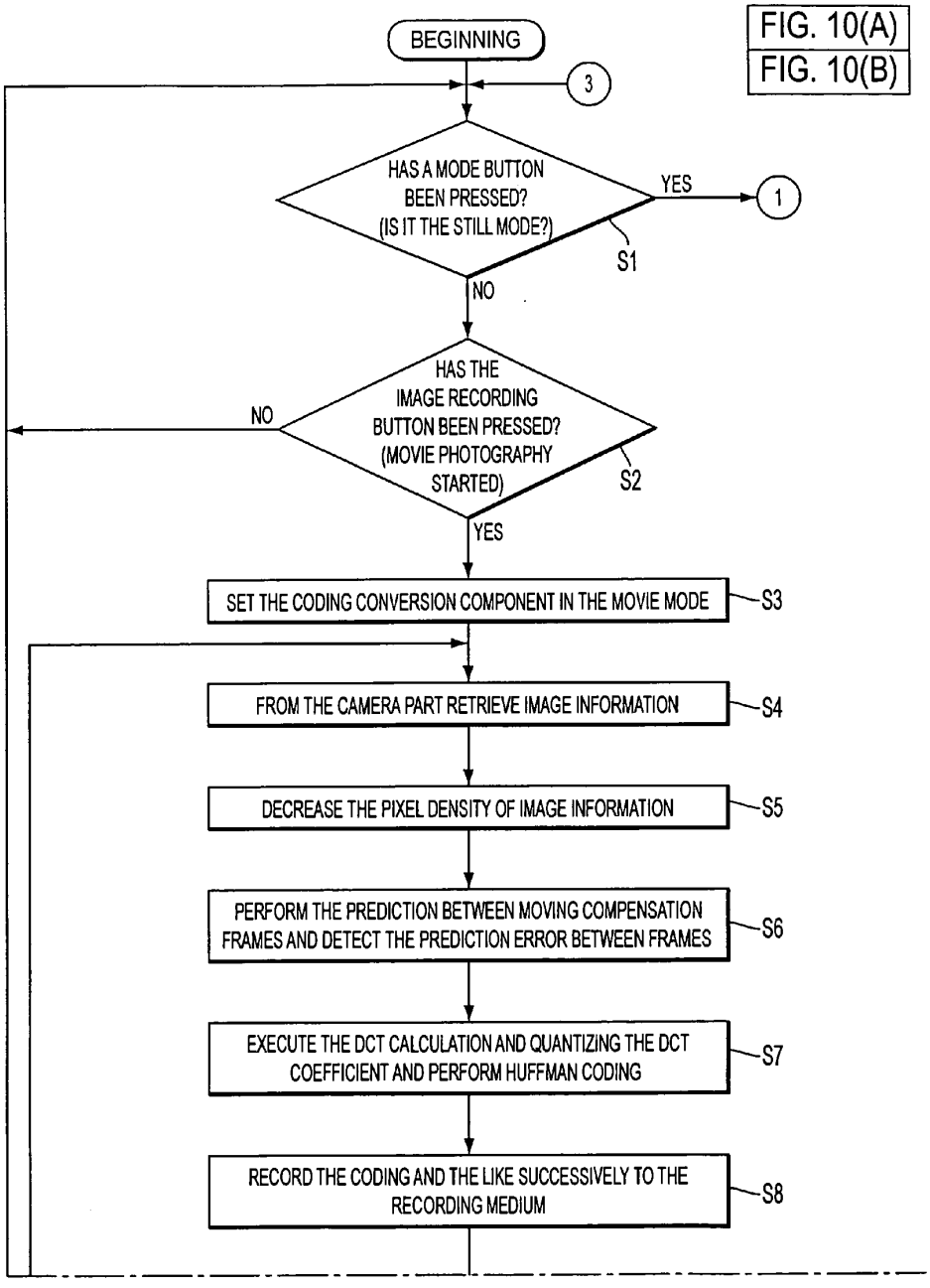


FIG. 10A

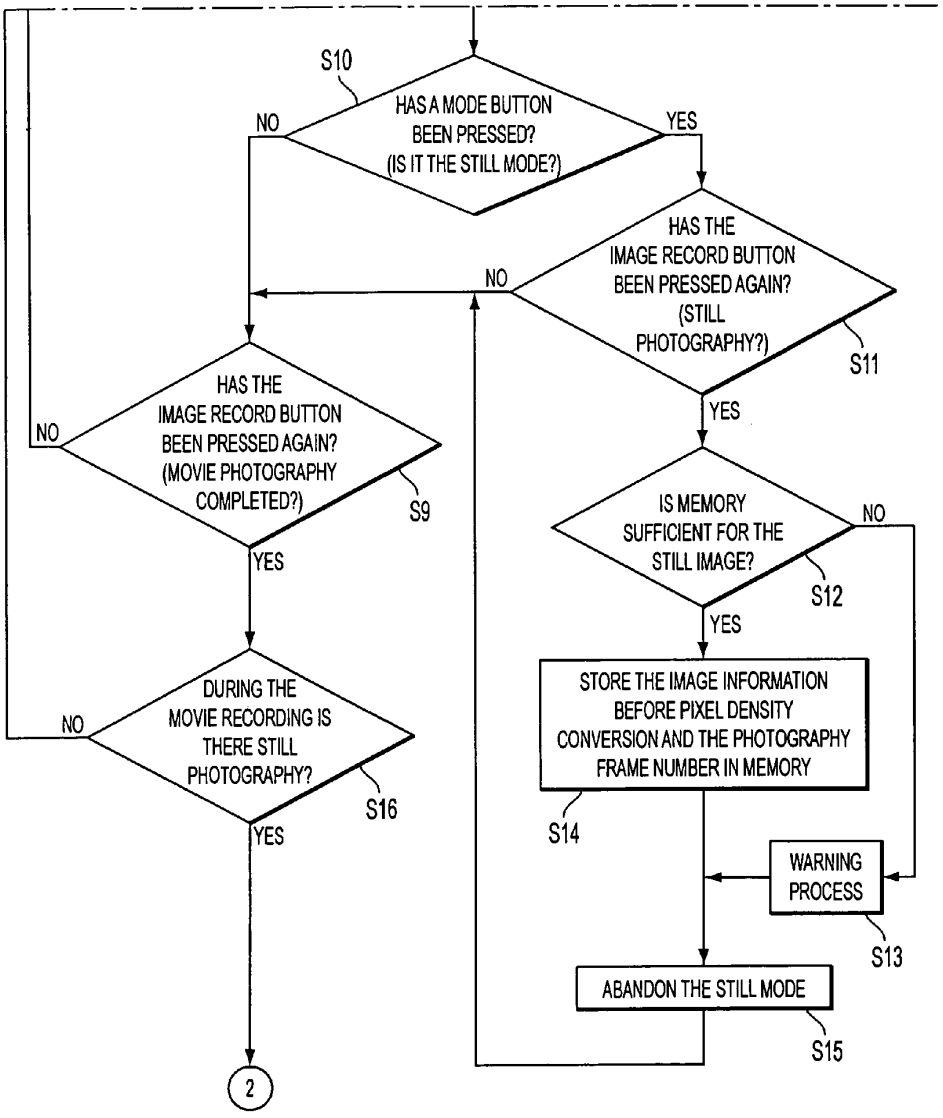

S10
HAS A MODE BUTTON BEEN PRESSED? (IS IT THE STILL MODE?)
NO
YES
HAS THE IMAGE RECORD BUTTON BEEN PRESSED AGAIN? (STILL PHOTOGRAPHY?)
S11
NO
YES
HAS THE IMAGE RECORD BUTTON BEEN PRESSED AGAIN? (MOVIE PHOTOGRAPHY COMPLETED?)
S9
NO
YES
IS MEMORY SUFFICIENT FOR THE STILL IMAGE?
S12
NO
YES
STORE THE IMAGE INFORMATION BEFORE PIXEL DENSITY CONVERSION AND THE PHOTOGRAPHY FRAME NUMBER IN MEMORY
S14
WARNING PROCESS
S13
ABANDON THE STILL MODE
S15
DURING THE MOVIE RECORDING IS THERE STILL PHOTOGRAPHY?
S16
NO
YES
2

FIG. 10B

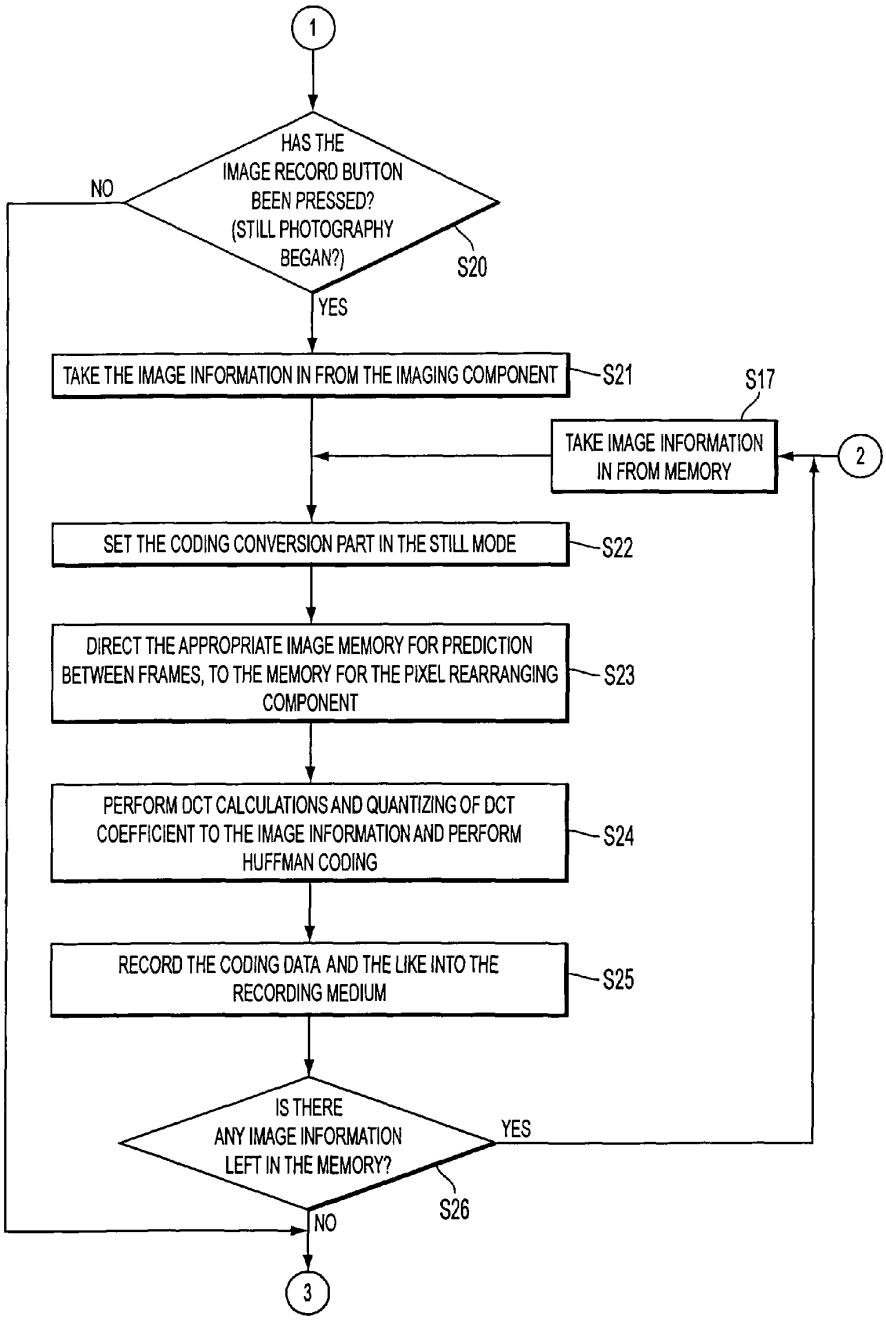

1
HAS THE IMAGE RECORD BUTTON BEEN PRESSED? (STILL PHOTOGRAPHY BEGAN?)
S20
NO
YES
TAKE THE IMAGE INFORMATION IN FROM THE IMAGING COMPONENT
S21
S17
TAKE IMAGE INFORMATION IN FROM MEMORY
2
SET THE CODING CONVERSION PART IN THE STILL MODE
S22
DIRECT THE APPROPRIATE IMAGE MEMORY FOR PREDICTION BETWEEN FRAMES, TO THE MEMORY FOR THE PIXEL REARRANGING COMPONENT
S23
PERFORM DCT CALCULATIONS AND QUANTIZING OF DCT COEFFICIENT TO THE IMAGE INFORMATION AND PERFORM HUFFMAN CODING
S24
RECORD THE CODING DATA AND THE LIKE INTO THE RECORDING MEDIUM
S25
IS THERE ANY IMAGE INFORMATION LEFT IN THE MEMORY?
S26
YES
NO
3

FIG. 11

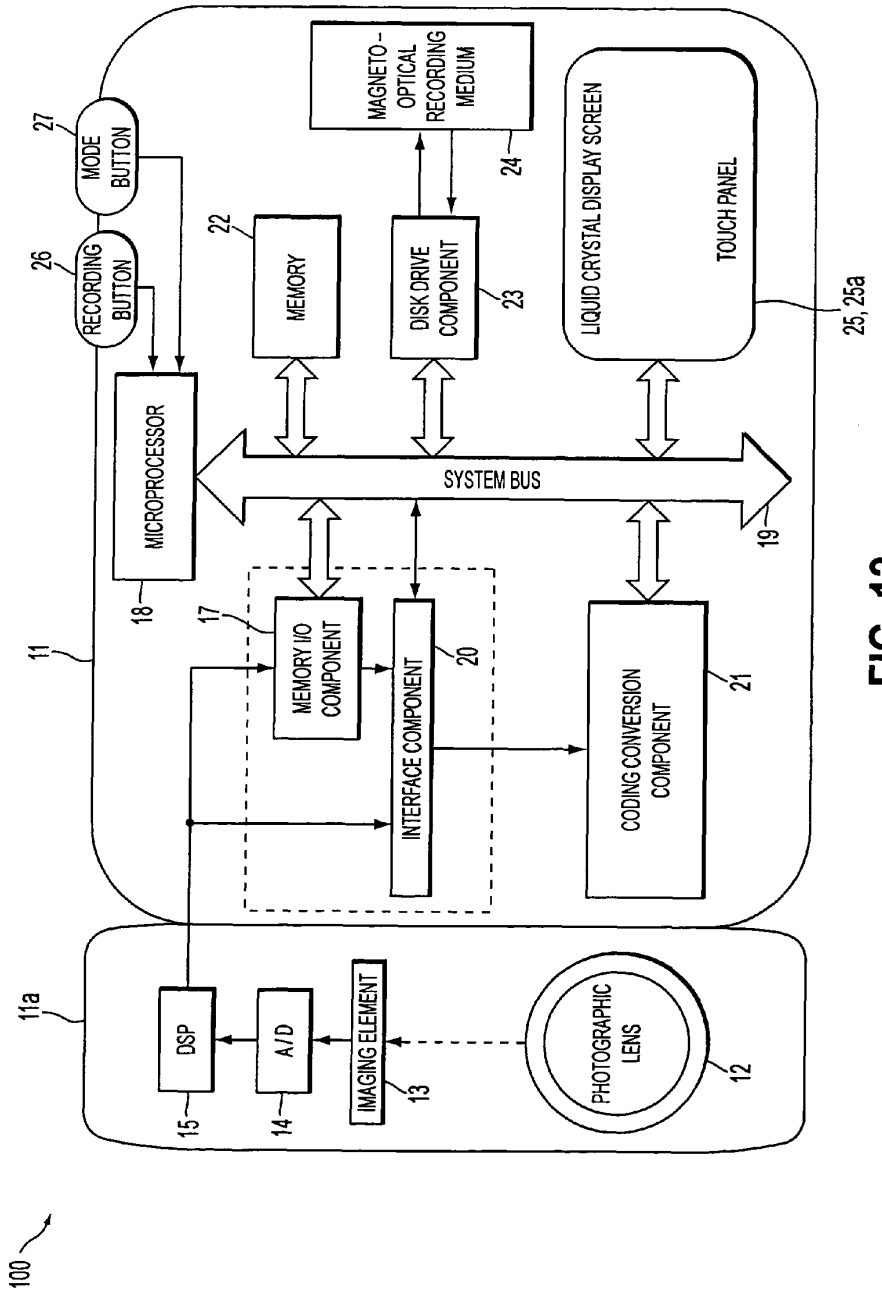

100
11
11a
MODE BUTTON
27
RECORDING BUTTON
26
MICROPROCESSOR
18
MEMORY
22
DISK DRIVE COMPONENT
23
MAGNETO-OPTICAL RECORDING MEDIUM
24
LIQUID CRYSTAL DISPLAY SCREEN
TOUCH PANEL
25, 25a
SYSTEM BUS
19
17
MEMORY I/O COMPONENT
INTERFACE COMPONENT
20
CODING CONVERSION COMPONENT
21
DSP
15
A/D
14
IMAGING ELEMENT
13
PHOTOGRAPHIC LENS
12

FIG. 12

FIG. 13
FIG. 13(A)
FIG. 13(B)

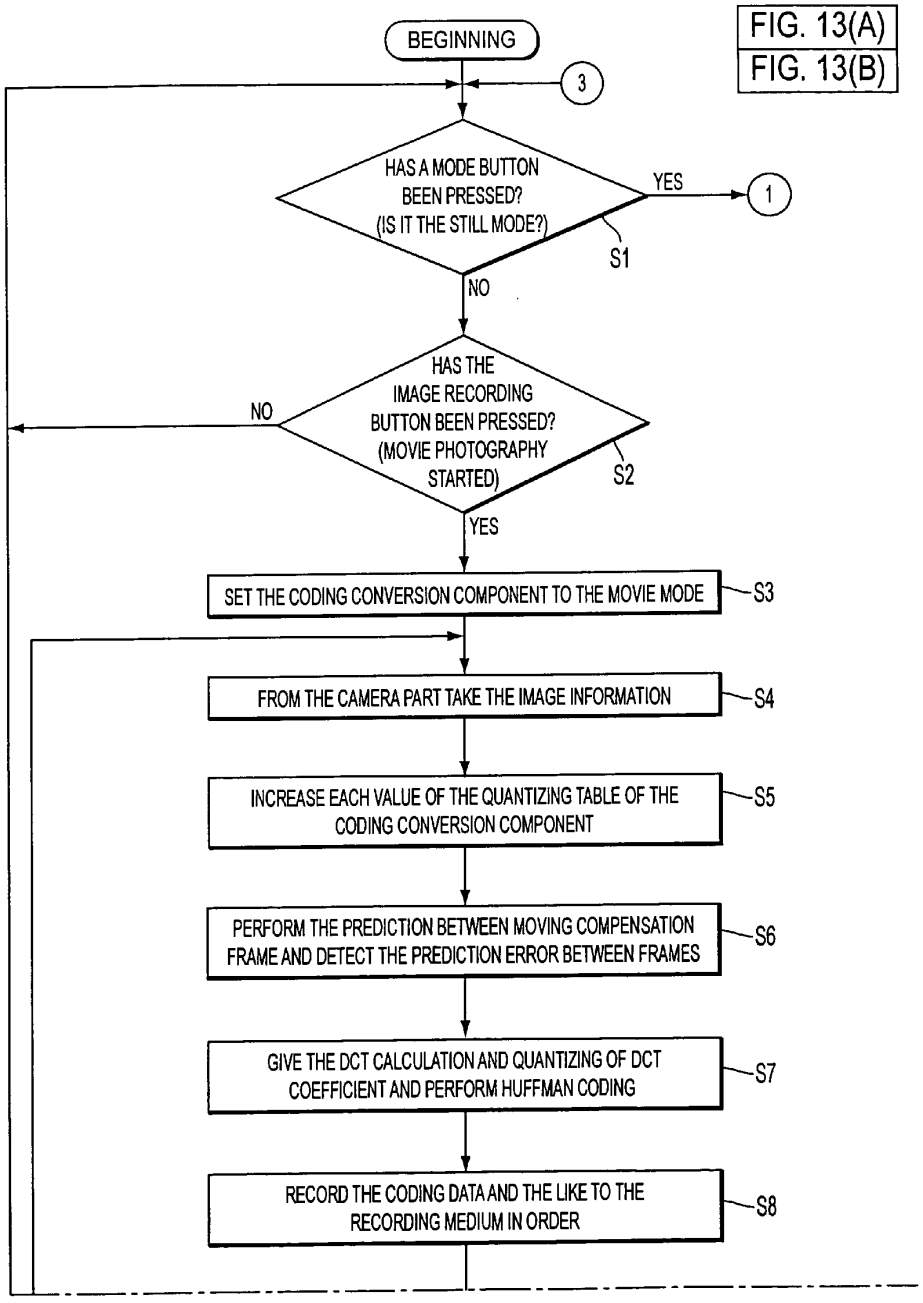


FIG. 13A

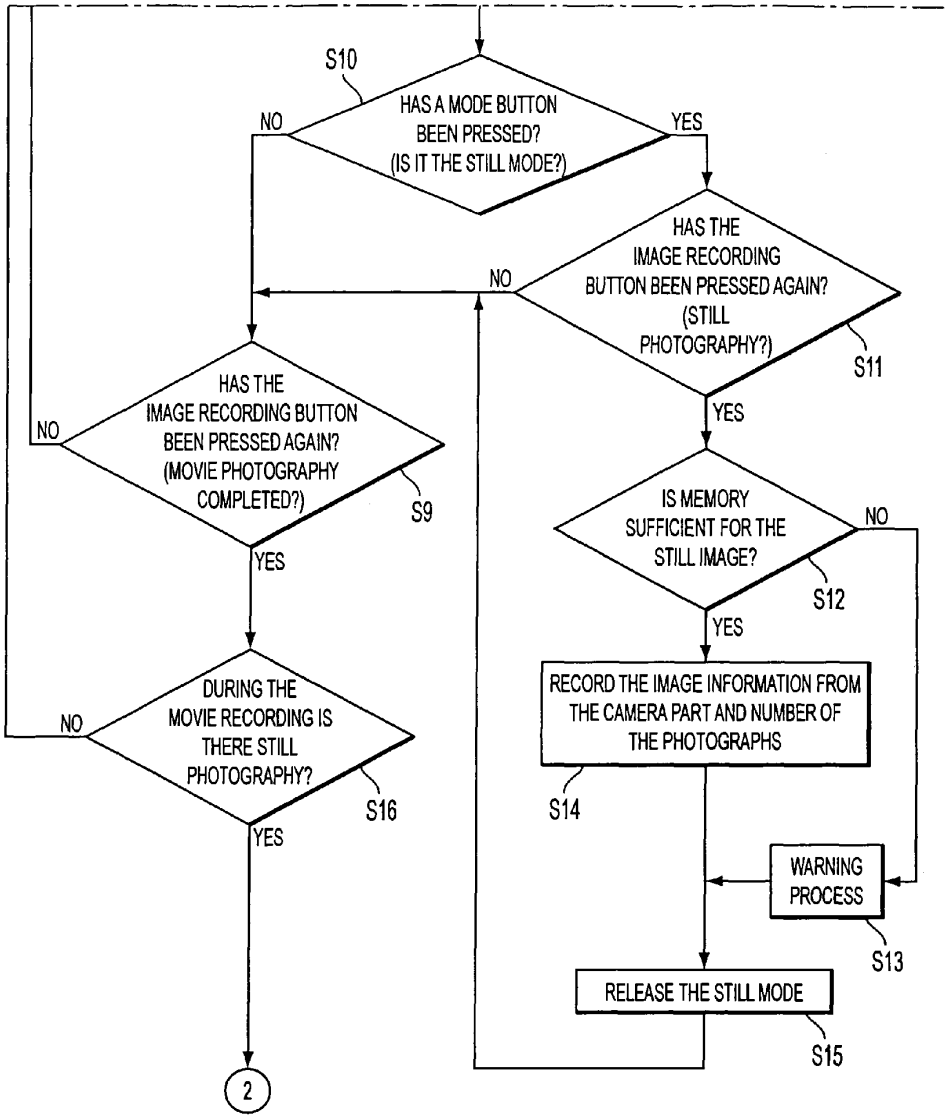

S10
HAS A MODE BUTTON BEEN PRESSED? (IS IT THE STILL MODE?)
NO
YES
HAS THE IMAGE RECORDING BUTTON BEEN PRESSED AGAIN? (STILL PHOTOGRAPHY?)
S11
NO
YES
HAS THE IMAGE RECORDING BUTTON BEEN PRESSED AGAIN? (MOVIE PHOTOGRAPHY COMPLETED?)
S9
NO
YES
IS MEMORY SUFFICIENT FOR THE STILL IMAGE?
S12
NO
YES
RECORD THE IMAGE INFORMATION FROM THE CAMERA PART AND NUMBER OF THE PHOTOGRAPHS
S14
DURING THE MOVIE RECORDING IS THERE STILL PHOTOGRAPHY?
S16
NO
YES
WARNING PROCESS
S13
RELEASE THE STILL MODE
S15
2

FIG. 13B

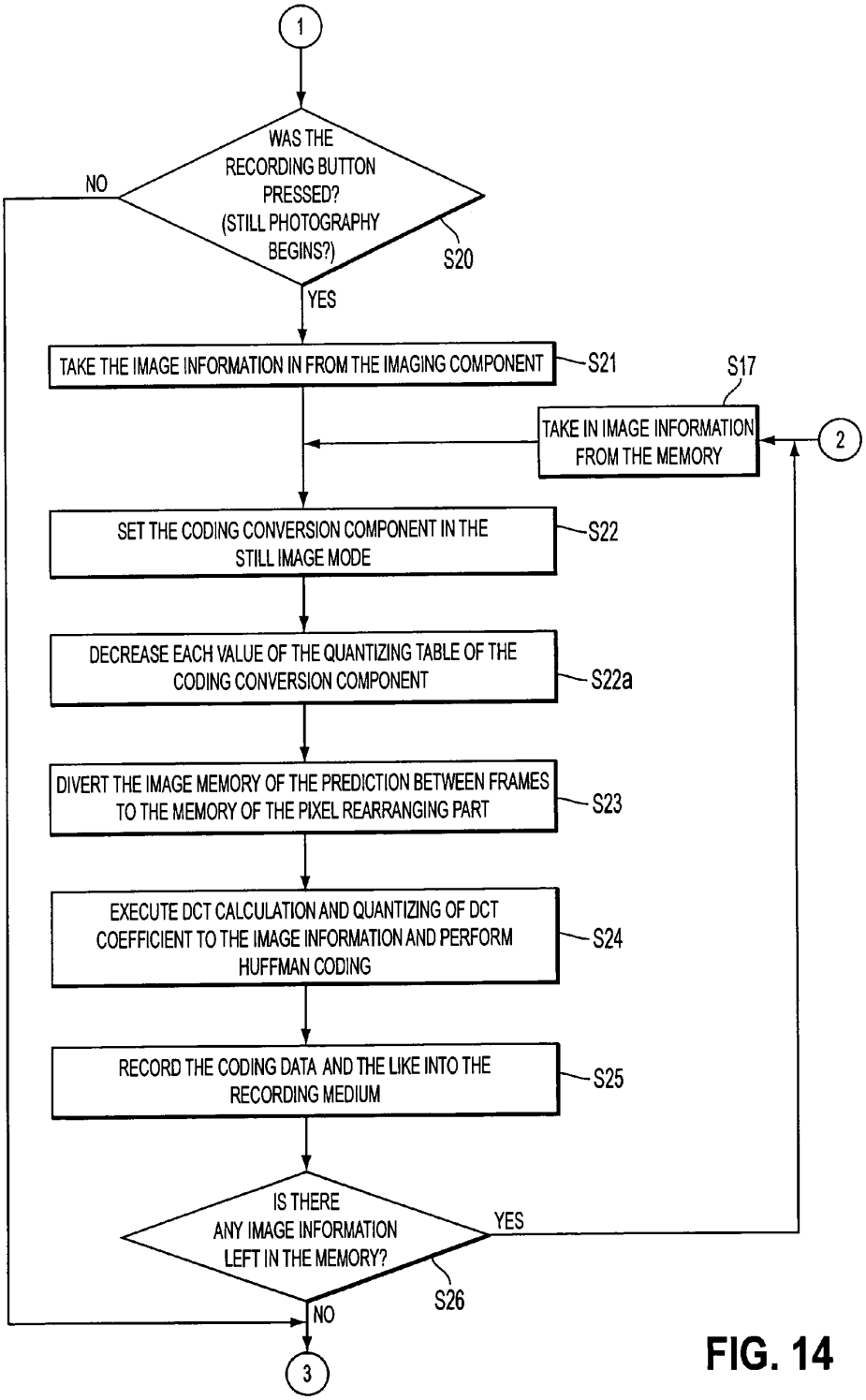

1
WAS THE RECORDING BUTTON PRESSED? (STILL PHOTOGRAPHY BEGINS?)
S20
NO
YES
TAKE THE IMAGE INFORMATION IN FROM THE IMAGING COMPONENT
S21
S17
TAKE IN IMAGE INFORMATION FROM THE MEMORY
2
SET THE CODING CONVERSION COMPONENT IN THE STILL IMAGE MODE
S22
DECREASE EACH VALUE OF THE QUANTIZING TABLE OF THE CODING CONVERSION COMPONENT
S22a
DIVERT THE IMAGE MEMORY OF THE PREDICTION BETWEEN FRAMES TO THE MEMORY OF THE PIXEL REARRANGING PART
S23
EXECUTE DCT CALCULATION AND QUANTIZING OF DCT COEFFICIENT TO THE IMAGE INFORMATION AND PERFORM HUFFMAN CODING
S24
RECORD THE CODING DATA AND THE LIKE INTO THE RECORDING MEDIUM
S25
IS THERE ANY IMAGE INFORMATION LEFT IN THE MEMORY?
S26
YES
NO
3

FIG. 14

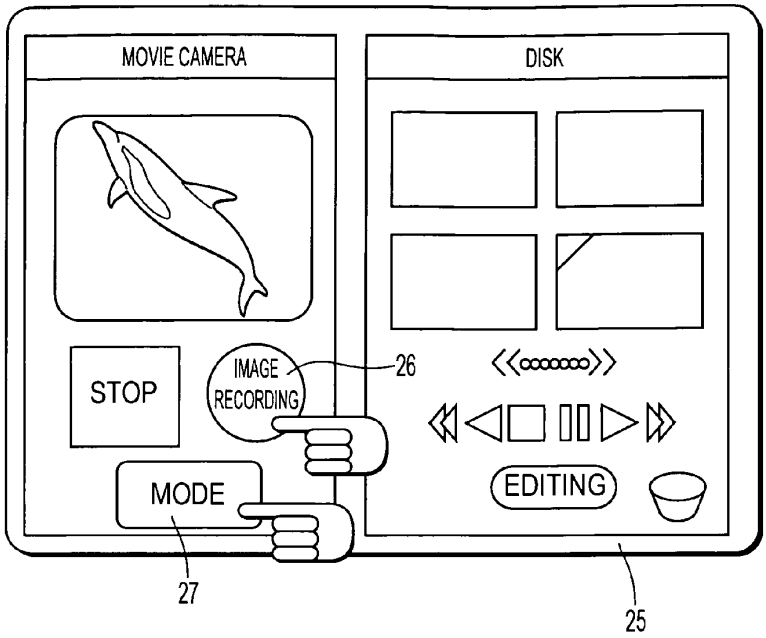

MOVIE CAMERA
DISK
STOP
IMAGE RECORDING
26
MODE
EDITING
27
25

FIG. 15

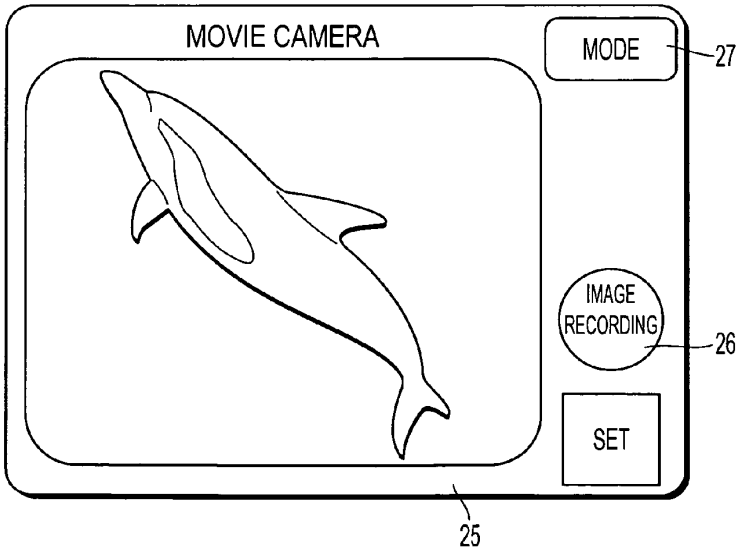

MOVIE CAMERA
MODE
27
IMAGE RECORDING
26
SET
25

FIG. 16

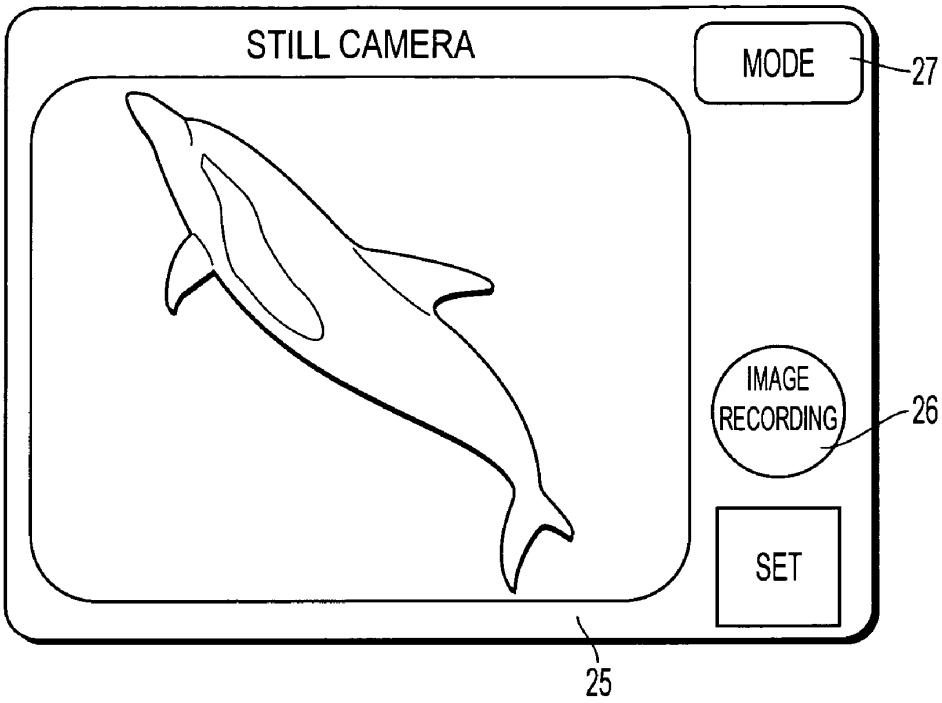


FIG. 17

ELECTRONIC CAMERA THAT DISPLAY INFORMATION REPRESENTATIVE OF ITS SELECTED MODE

This is a Continuation of application Ser. No. 09/951,417, filed Sep. 14, 2001, which in turn is a Continuation of application Ser. No. 08/937,805, filed Sep. 25, 1997 (now abandoned). Said application Ser. No. 08/937,805 claims the benefit of Provisional Application No. 60/040,922, filed Mar. 27, 1997. The entire disclosure of the prior applications are hereby incorporated by reference herein in their entireties.

INCORPORATION BY REFERENCE

The disclosure of the following priority application is herein incorporated by reference: Japanese Application No. 8-253343 filed on Sep. 25, 1996.

BACKGROUND OF THE INVENTION

1. Field of Invention

This invention relates to an electronic camera that records both moving images and still images.

2. Description of Related Art

In recent years, electronic cameras have been developed that photoelectrically convert an object to image information of a moving image, execute image compression such as high efficiency coding on that image information, and record the compressed image information in a recording medium.

As representative of this kind of electronic camera, digital video (DV) cameras are known. In a DV camera, a still image recording mode is provided and it is possible to record one frame of a still image and combine it with a sound signal over a number of seconds.

In this conventional example, a still image is recorded as a snapshot corresponding to one frame of a moving image. However, in this conventional example, a still image is recorded in the image quality of one frame of a moving image (for example, in the NTSC method of a YC component, excluding the retracing period), the vertical degree of resolution is 480 lines and the horizontal degree of resolution is 500 lines.

SUMMARY OF THE INVENTION

Therefore, an object of the present invention is to provide an electronic camera that can record a still image at a high image quality.

Another object of the present invention is to provide an electronic camera that can image still objects or subjects at will, even while recording a moving object or subject.

Yet another object of the present invention is to provide an electronic camera that is designed to share the recording process for still images and the recording process for moving images.

A still further object of the present invention is to provide an electronic camera that can record still images at a high image quality, while designing the electronic camera so that it is made to share the recording process for still images and the recording process for moving images.

Another object of the present invention is to provide an electronic camera that can image still images at will, even while recording a moving image.

Still further, another object of the present invention is to provide an electronic camera that can enhance the operational quality relating to recording changeover between still images and moving images.

Accordingly, an electronic camera is used with a display screen and includes imaging means, pixel density conversion means, a recording medium, moving image recording means and still image recording means. The imaging means images an object and converts the imaged object to image information. The pixel density conversion means converts the image information converted by the imaging means to a pixel density suitable for a scan format of the display screen. The moving image recording means successively retrieves the image information from the pixel density conversion means and records the image information in the recording medium as a series of moving images. The still image recording means retrieves the image information converted by the imaging means and records the image information in the recording medium as a still image.

The imaging means includes an imaging pixel number and the scan format includes a scan pixel number wherein the imaging pixel number is larger than the scan pixel number. The pixel density conversion means reduces the image information converted by the imaging means to a pixel density that is suitable for the scan format. Preferably, the electronic camera of the present invention includes buffer means that temporarily stores the image information from the imaging means upon receipt of a command for recording still images when the command for recording is given from an external source during a recording period of the moving image recording means. The still image recording means waits until completion of recording by the moving image recording means and records the image information stored in the buffer means in the recording medium. Preferably, the moving image recording means and the still image recording means share a coding conversion component for executing high efficiency coding within a field or frame on the image information that has been retrieved.

It is preferable that the electronic camera of the present invention include a recording switch and a changeover switch. The recording switch receives a recording command from an external source. The changeover switch which receives the recording command from the recording switch can be used either for the moving image recording means or for the still image recording means in response to a mode changeover command from an external source.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in conjunction with the following drawings in which like reference numerals designate like elements and wherein:

FIG. **1** is a block diagram depicting an exemplary embodiment of an electronic camera of the present invention;

FIG. **2** is a block diagram depicting another exemplary embodiment of the electronic camera of the present invention;

FIG. **3** is a block diagram depicting another exemplary embodiment of the electronic camera of the present invention;

FIG. **4** is a block diagram depicting another exemplary embodiment of the electronic camera of the present invention;

FIG. **5** is a block diagram depicting another exemplary embodiment of the electronic camera of the present invention;

FIG. **6** is a block diagram depicting another exemplary embodiment of the electronic camera of the present invention;

FIG. **7** is a block diagram of a first preferred embodiment of the electronic camera of the present invention;

FIG. **8** is a perspective view of the first preferred embodiment of the electronic camera of the present invention;

FIG. **9** is a block diagram illustrating a structure of a coding conversion component;

FIG. **10** is flowchart depicting partial operation of the first preferred embodiment of the electronic camera of the present invention;

FIG. **11** is flowchart depicting partial operation of the first preferred embodiment of the electronic camera of the present invention;

FIG. **12** is a block diagram illustrating a second preferred embodiment of the electronic camera of the present invention;

FIG. **13** is a flowchart depicting partial operation of the second preferred embodiment of the electronic camera of the present invention;

FIG. **14** is a flowchart depicting partial operation of the second preferred embodiment of the electronic camera of the present invention;

FIG. **15** is a first example display shown on a display screen of the electronic camera of the present invention;

FIG. **16** is a second example display shown on the display screen of the electronic camera of the present invention; and

FIG. **17** is a third example display shown on the display screen of the electronic camera of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. **1** is a block diagram of an exemplary embodiment of the present invention.

In FIG. **1**, an electronic camera **100** includes an imaging means **1** that images an object or living subject (hereinafter referred to as "object") and converts an image thereof to image information. A pixel density conversion means **2** converts the image information converted by the imaging means **1** to a pixel density suitable for a scan format of a display screen. A moving image recording means **3** successively retrieves the image information in which the pixel density has been converted by the pixel density conversion means **2** and records it in a recording medium R as a series of moving images. A still image recording means **4** retrieves image information converted by the imaging means **1** to record it in the recording medium R as a still image.

When performing the recording of a moving image, first, the image information from the imaging means **1** is converted via the pixel density conversion means **2** to a pixel density that is compatible with a scan format of a display screen **25** (shown in FIG. **8**). Although not by way of limitation, the display screen **25** can be an electronic viewfinder, a monitor screen attached to the case of the electronic camera, a device displaying the playback of the image information from the recording medium R (for example, a television or a computer monitor) or an image display device connected to an image output terminal of the electronic camera.

The moving image recording means **3** retrieves the image information after pixel density conversion, creates a moving image, and records the moving image in the recording medium R. On the other hand, when performing the recording of a still image, the image information is not retrieved by the pixel density conversion means **2** but rather by the still image recording means **4**. The still image recording means **4** records the image information in the recording medium R.

The imaging means **1** has a pixel number that is larger than the pixel number of the scan format. Accordingly, the pixel density conversion means **2** reduces the image information converted by the imaging means **1** to a pixel density that is suitable for the scan format. Therefore, the image information is created in the imaging means **1**, in a pixel density that is higher than the pixel density of the scan format.

At this time, when a moving image is recorded, the pixel density conversion means **2** reduces the density of the image information that initially has a high pixel density to a pixel density appropriate to the scan format. The moving image recording means **3** records the image information after this conversion to the recording medium R. On the other hand, when the still image is recorded, the still image recording means **4** records the image information in a state in which the pixel density is high in the recording medium R as a still image.

FIG. **2** is a block diagram of another exemplary embodiment of the present invention.

In FIG. **2**, the electronic camera **100** is equipped with a buffer means **5** that temporarily stores the image information from the imaging means **1** upon receipt of a command for recording still images when the command for recording is given from an external source during a recording period of the moving image recording means **3**. The still image recording means **4** waits for completion of recording by the moving image recording means **3** and records the image information stored in the buffer means **5** in the recording medium R.

When the still image recording command is supplied from an external source during the moving image recording period, the buffer means **5** temporarily stores the image information from the imaging means **1**. The still image recording means **4** waits for completion of recording of the moving image recording means **3** and records the image information stored in the buffer means **5** in the recording medium R. By doing this, it is possible to reliably image snapshots even during recording of moving images.

FIG. **3** is a block diagram of another exemplary embodiment of the present invention.

In FIG. **3**, the moving image recording means **3** and the still image recording means **4** share a coding conversion component **6** for executing high efficiency coding within a field or frame on the image information that has been retrieved.

The moving image recording means **3** and the still image recording means **4** share the coding conversion component **6** that performs high efficiency coding (i.e., compression) of the image information. For example, in a moving image coding conversion section, processes are performed such as a DCT (Discreet Cosine Transform) calculation, predictions between the frames, variable length coding, and the like. On the other hand, in a still image coding conversion processes are performed such as a DCT calculation, variable length coding and the like. Therefore, the processes within a frame or field in the moving image coding conversion section are the same as the processes for the still image coding conversion section. It is possible to simplify the calculation process algorithms, the circuit structure of the electronic camera and the like by providing the coding conversion component **6** to perform these common processes.

FIG. **4** is a block diagram of another exemplary embodiment of the present invention.

In FIG. **4**, the imaging means **1** images the object and converts it to image information. An image compression means **7**, which can be any conventional image compression device known in the art, compresses image information imaged by the imaging means **1**. The moving image recording means **3** successively retrieves the image information compressed by the image compression means **7** to record it in the recording medium R as moving images. The still image recording means **4** retrieves the image information compressed by the image compression means **7** to record it in the

recording medium R as a still image. A compression rate changing means **8** which can be any conventional compression rate changing device known in the art increases the compression rate of the image compression means **7** during recording of the moving image recording means **3** and lowers the compression rate of the image compression means **7** during recording of the still image recording means **4**. The compression rate is the ratio of the amount of information before compression to the amount of information that remains after compression. The compression rate of the image compression means **7** is raised during recording of a moving image, and the compression rate is lowered during recording of still images.

FIG. **5** is a block diagram of another exemplary embodiment of the present invention.

In FIG. **5**, the electronic camera is equipped with the buffer means **5** that temporarily stores the image information from the imaging means **1** upon receipt of the command for recording still images when the command for recording is given from the external source during the recording period of the moving image recording means **3**. The image compression means **7** waits for completion of recording by the moving image recording means **3** and compresses the image information stored in the buffer means **5**. The still image recording means **4** retrieves the image information from the buffer means **5** that has been compressed by the image compression means **7** and records it in the recording medium R as a still image.

When the still image recording command is externally supplied during the moving image recording period, the buffer means **5** temporarily stores image information from the imaging means **1**. In this state, the image compression means **7** waits for the completion of recording of the moving image recording means **3** and compresses the image information stored in the buffet means **5** (using the still image compression rate supplied by compression rate changing means **8**). The still image recording means **4** records the image information compressed in this manner in the recording medium R.

FIG. **6** is a block diagram of another exemplary embodiment of the present invention.

In FIG. **6**, the electronic camera includes a recording switch **10***a* that receives a recording command from the external source and a changeover switch **10***b* in which the recording command received by the recording switch **10***a* can be used either for the moving image recording means **3** or for the still image recording means **4** in response to a mode changeover command from the external source. As a result of changing over by the changeover switch **10***b*, the recording switch **10***a* has a dual use as the switch operating the still image recording means **4** and the moving image recording means **3**.

The preferred embodiments of the electronic camera of the present invention are described below based on the drawings.

FIG. **7** is a block diagram of a first preferred embodiment of the present invention. FIG. **8** shows an outer appearance of the first embodiment of the present invention.

In FIGS. **7** and **8**, on a side surface of a main body **11** of the electronic camera, a camera part **11***a* is installed so that it freely rotates, and a photographic lens **12**, that performs image resolution of the object image, is attached to the camera part **11***a*.

Light passing through the photographic lens **12** is refracted within the camera part **11***a*, and received by a photoreceptor surface of an imaging element **13**, which is composed of a CCD image sensor. For example, the number of pixels of the imaging element **13** is 960 in length×1280 in width, which is twice the degrees in both length and width of the effective resolution in a NTSC method.

The photoelectric output of the imaging element **13** is connected to a picture image signal processor **15** that performs white balance adjustment, gamma correction, or the like via an A/D converter **14**.

The image information of the picture image signal processor **15** is input to an image density converter **16** and a memory I/O component **17**.

The image density converter **16** performs conversion of the pixel density by executing interpolation, dividing into identical blocks, thinning, and the like, to the pixel value of the image information.

The memory I/O component **17** controls input and output of the image information to a system bus **19** of a microprocessor **18**.

The output of the image density converter **16** and the memory I/O component **17** is input to a coding conversion component **21** via an interface component **20**.

The interface component **20** communicates with the microprocessor **18** via the system bus **19**.

To the system bus **19**, a memory **22**, disk drive part **23**, the liquid crystal display screen **25**, and a touch panel **25***a* are respectively connected.

The memory **22**, in conjunction with being used in the information processing of the microprocessor **18**, is also used as a buffer for temporarily storing image information.

A magnetooptical recording medium **24** is externally installed to a disk drive component **23**.

The liquid crystal display screen **25** is arranged on the rear surface side of the main body **11**, and the touch panel **25***a* is provided over the surface of the liquid crystal display screen **25**.

An image recording button **26**, and a mode button **27** are arranged on the main body **11** and are connected to the microprocessor **18**.

FIG. **9** is a block diagram describing the structure of the coding conversion component **21**.

In FIG. **9**, the image information input via the interface component **20** (FIG. **7**) is provided to a pixel arranging component **31** and a moving vector detection component **33**. The output of the pixel arranging component **31** is connected respectively to a first input of a subtracting device **32** and a first input of a first switch **34**.

The output of the subtracting device **32** is connected to a second input of the first switch **34**, and the output of the first switch **34** is connected to a quantizer **36** via a DCT calculator **35**. The output of the quantizer **36** is connected to a reverse quantizer **37** and a variable length coder **38**. The output of the variable length coder **38** is connected to a first input of the data multiplexer **39**.

On the other hand, the output of the reverse quantizer **37** is connected to a first input of an adding component **41** via a inverse DCT calculator **40**. The output of adding component **41** is connected to an image memory **42** having the storage capacity of a frame of image data. The image information accumulated in the image memory **42** is input to a second input of the moving vector detection component **33** and a first input of a motion compensation component **43**.

The output of the moving vector detection component **33**, in conjunction with being connected to a second input of the motion compensation component **43**, is connected to a second input of the data multiplexer **39** via a second switch **45**.

The prediction-between-the-frames result output from the motion compensation component **43**, in conjunction with

being input to a second input of the subtracting device **32**, is input to a second input of the adding component **41** via a third switch **44**.

On the other hand, the control output of the compression mode controller **46** connected to the system bus **19**, is connected to the pixel arranging part **31**, the first switch **34**, the third switch **44**, the second switch **45**, the control header generator **47**, and the like.

The input/output of the control header generator **47** are connected individually to the quantizer **36**, the variable length coder **38** and to a third input of the data multiplexer **39**.

The output of the data multiplexer **39** is connected to the system bus **19**.

With respect to FIGS. **1-6**, the imaging means **1** includes the photographic lens **12**, the imaging element **13**, the A/D converter **14**, and the picture image signal processor **15**. The pixel density conversion means **2** includes the image density converter **16**. The moving image recording means **3** includes the coding conversion component **21**, the disk drive component **23** and a command controlling the recording operation of the moving image of the microprocessor **18**. The still image recording means **4** includes the coding conversion component **21**, the disk drive component **23**, and a command controlling the recording operation of the still image of the microprocessor **18**. The buffer means **5** includes the image compression means **7** and the memory **22**. The coding conversion component **6** includes the pixel arranging component **31**, the DCT calculator **35**, the quantizer **36**, the variable length coder **38**, and the data multiplexer **39**. The recording switch **10***a* includes the image recording button **26** and the changeover switch **10***b* corresponds to the mode button **27**. The various means of FIGS. **1-6** are not limited to these structures, which only relate to one possible implementation of the invention.

FIG. **10** and FIG. **11** are flowcharts that describe the operation of the first embodiment. The operation of the first embodiment is described below using these figures.

First, when the mode button **27** is pressed (FIG. **10** S**1**), the microprocessor **18** determines that it is the still mode that performs still image photography, and after the liquid crystal display screen **25** is changed to the display used for the still mode, the process moves to the step S**20**, which will be explained later.

When the mode button **27** has not been pressed (FIG. **10** S**1**), the microprocessor **18** determines that it is the movie mode that performs photography of moving images.

In the movie mode, when the image recording button **26** has been pressed (FIG. **10** S**2**), the microprocessor **18** sets the coding conversion component **21** as appropriate for the movie mode (FIG. **10** S**3**). That is, the microprocessor **18** sets the output selection of the first switch **34** to the first input side via a compression mode controller **46**, and, specifically, the third switch **44** and the second switch **45** are defined in an ON state.

At this time, the image density converter **16** successively retrieves image information, that has been digitized, from the camera part **11***a* (FIG. **10** S**4**). The image density converter **16** divides the image information into 2×2 pixel blocks, respectively, and reduces the density to a pixel density of 480×640 pixels (FIG. **10** S**5**). At this time, the pixel density in the vertical direction becomes equivalent to 480, after excluding the retrace time, from the number of scanning lines, 525, in the vertical direction in the NTSC method.

The microprocessor **18** changes over the output selection of the interface component **20**, and transmits the output of the image density converter **16** to the coding conversion component **21**. Within the coding conversion part **21**, high efficiency coding corresponding to the moving image is executed in the following manner:

First, in the pixel arranging component **31**, the image pixels are divided into 8×8 pixel blocks and are output. The subtracting device **32** writes in these pixel blocks and calculates the differential, i.e., the prediction error between the pixel blocks and the pixel blocks predicted between the frames in the motion compensation component **43** (FIG. **10** S**6**).

The DCT calculator **35** converts the 8×8 pixel value into 64 individual DCT coefficients by executing a discrete cosine transform for this prediction error. The quantizer **36** quantizes these DCT coefficients according to a fixed quantizing table.

The variable length coder **38** converts the quantized DCT coefficients to a variable code such as a Huffman code, and outputs it to the data multiplexer **39** (FIG. **10** S**7**).

On the other hand, in the reverse quantizer **37**, the reverse DCT calculator **40** and the adding part **41**, decoding of the image information is performed based on the quantized DCT coefficient. The decoded image information is stored successively in the image memory **42**.

For example, the compression/decompression process can be performed according to the JPEG standards for still images, and according to the MPEG standards for moving images. Other compression techniques can also be used with the invention.

The moving vector detection component **33** compares the former decoded image information stored in the image memory **42** with the current image information and detects the moving vector based on a rigid body hypothesis of the object. A moving vector detected in this manner, in conjunction with being transferred to the data multiplexer **39**, is used in prediction between frames in the motion compensation component **43**.

On the other hand, in a control header generator **47** (FIG. **9**), header information is generated that includes a quantizing table, a Huffman coding table, and the like, and is transmitted to the data multiplexer **39**. In the data multiplexer **39**, data transmitted from the variable length coder **38**, the moving vector detection component **33** and the control header generator **47** is multiplied and output to the system bus **19**. The disk drive component **23** successively retrieves this data, and records it in the magnetooptical recording medium **24** (FIG. **10** S**8**).

By repeating the recording operation described above until the image recording button **26** has again been pressed (FIG. **10** S**9**), a moving-image image file is created on the magnetooptical recording medium **24**.

On the other hand, when the mode button **27** and the image recording button **26** have been simultaneously or successively pressed during the recording period of the moving image (FIG. **10** S**10**, S**11**), the microprocessor **18** determines that there has been an external command for still photography, and one frame of image information is temporarily stored in the following manner:

First, it is determined whether one frame of image information can be housed in the memory **22** to which it is temporarily stored (FIG. **10** S**12**). Then, when the amount of free memory capacity is determined insufficient, a warning message is displayed on the liquid crystal display screen **25** (FIG. **10** S**13**), the still mode is abandoned (FIG. **10** S**15**) and the recording operation of moving images continues as is.

On the other hand, when there is sufficient free memory capacity, the memory I/O component **17** retrieves one frame of image information from the camera part **11***a*, and temporarily stores this still image in the memory **22** via the system bus **19** (FIG. **10** S**14**). During this temporary storage operation, the recording operation of the moving image continues as is. Moreover, the temporary storage of the still image can be performed for a plurality of frames, limited only by the capacity of the memory **22**.

During the recording operation for this kind of moving image, the moving image recording operation is completed when the image recording button **26** has again been pressed during step S**9**. At this time, the microprocessor **18**, during the recording operation of the moving image, determines

whether the aforesaid still image temporary storage operation has been performed (FIG. **10** S**16**).

At this time, when the still image temporary storage operation has not been performed, the microprocessor **18** returns to step S**1** and repeats the above-described operation. On the other hand, when the still image temporary storage operation has been performed, the microprocessor **18** reads out the still image from the memory **22** (FIG. **11** S**17**), moves to the operation in step S**22**, which is described later, and executes recording of the still image.

Also, the microprocessor **18** moves to step S**20** when the mode button **27** is pressed in step S**1** and waits until the image recording button **26** is pressed. In this state, when the image recording button **26** is pressed (FIG. **11** S**20**), the microprocessor **18** retrieves one frame of a still image from the camera part **11***a* via the memory I/O component **17**. This still image is stored for a time in the memory **22** or the like.

Next, the microprocessor **18** sets the coding conversion component **21** in the still mode for still image compression (FIG. **11** S**22**). That is, the microprocessor **18** sets the output selection of the first switch **34** to the second input side via the compression mode controller **46**, and the third switch **44** and second switch **45** are defined as in the OFF state. Further, the pixel arranging component **31**, by re-using the image memory **42** for prediction between the frames, stores the entire still image that has a high pixel density (FIG. **11** S**23**).

Next, in the pixel arranging component **31**, the image information of the still image is divided into 8×8 pixel blocks and output. The DCT calculator **35** converts the 8×8 pixel block into 64 individual DCT coefficients by executing a discrete cosine transform on this pixel block. The quantizer **36** quantizes these DCT coefficients according to a fixed quantizing table. The variable length coder **38** converts the quantized DCT coefficients into a variable length code such as a Huffman code and outputs it to the data multiplexer **39** (FIG. **11** S**24**).

On the other hand, in the control header generator **47**, header information is generated including a quantizing table and a Huffman coding table. This header information is transmitted to the data multiplexer **39**. In the data multiplexer **39**, the data transmitted from the variable length coder **38** and the control header generator **47** is multiplied and output to the system bus **19**. The disk drive component **23** successively retrieves this data and records it as an image file of a still image in the magnetooptical recording medium **24** (FIG. **11** S**25**).

Then, the microprocessor **18** investigates whether any other still images that have been given temporary storage in the memory **22** yet remains (FIG. **11** S**26**). When a still image yet remains in the memory **22**, the microprocessor **18** returns to step S**17** and performs retrieval of image information. On the other hand, when still images are no longer there, the microprocessor **18** returns to step S**1**.

As described above, in the first embodiment, the imaging element **13**, the A/D converter **14**, and the picture image signal processor **15** can share the still image and moving image recording processes. Further, by changing over the pixel density via the image density converter **16**, it is possible to record a still image having a higher image quality than that of a moving image, while recording the moving image in an image density matching the scan format.

Furthermore, because the still image has temporarily been given temporary storage in the memory **22**, it is possible to reliably photograph a still image even during the recording period of the moving image.

Further, because a common component of the coding conversion component **21** has a dual use as a still image/moving image coding process, the structure of the electronic camera, the calculation process algorithm or the like can be made to be more concise. Furthermore, by pressing the mode button **27**, it is possible for the image recording button **26** to have a dual use as a still image/moving image recording switch.

Next, a second preferred embodiment of the present invention is described. FIG. **12** is a block diagram of the second preferred embodiment of the present invention. A feature of the structure of the second embodiment is that the image density converter **16** (FIG. **7**) is omitted. Moreover, the structural elements that are the same as the structural elements shown in FIGS. **7**-**9** are denoted with the same reference numbers and any repetitive explanation here is omitted.

With respect to FIGS. **4** and **5**, the imaging means **1** includes the photographic lens **12**, the imaging element **13**, the A/D converter **14**, and the picture image signal processor **15**. The moving image recording means **3** includes the disk drive component **23** and the command controlling recording of the moving image of the microprocessor **18**. The still image recording means **4** includes the disk drive component **23** and the command controlling the recording of the still image of the microprocessor **18**. The image compression means **7** includes the coding conversion component **21**. A compression rate changing means **8** shown in FIG. **4** includes the compression mode controller **46**, the control header generator **47** and the command changing the quantizing table of the microprocessor **18**. The buffer means **5** includes the memory I/O component **17** and the memory **22**.

FIGS. **13** and **14** are flowcharts describing the operation of the second embodiment of the present invention. The main features in the operation of the second embodiment of the present invention are the following two points:

1) When recording a moving image, the control header generator **47** generally changes each value of the quantizing table to a greater value (FIG. **13** S**5**); and
2) When recording a still image, the control header generator **47** generally changes each value of the quantizing table to a smaller value (FIG. **14** S**22***a*).

Due to this operation, in the second embodiment of the present invention, the image compression rate for still images is suppressed so that it is low, and the inferiority of quality during playback of the still image is reduced. Further, with regard to a moving image, it is possible for the image compression rate to become high, and to suppress the file capacity of the moving image so that it is low. Furthermore, because the memory **22** temporarily gives temporary storage to the still image, it is possible to reliably record still images even during the moving image recording period.

Moreover, although in the embodiment described above, manual image recording operations are received by the image recording button **26** and the mode button **27** provided on the main body **11**, the structure of the present invention is not limited to this. For example, it is also possible to display an operation screen (i.e., a user interface screen), such as is shown in FIGS. **15**-**17**, that is displayed on the liquid crystal display screen **25**, and to receive manual operations via the touch panel **25***a*. In this case, it is optimum, when the mode buttons **27** shown in FIGS. **16** and **17** are each respectively pressed, to display these screens as mutually interchangeable.

Further, in the embodiments described above, although the magnetooptical recording medium **24** has been used as the recording medium, the present invention is not limited to specific materials or structural form of recording medium; it is acceptable to use any recording medium that can record image information. For example, an optical recording medium, a magnetic recording medium, or a memory card may be used.

Furthermore, in the embodiments described above, although the still image playback operation has not been described, when printing on a paper medium such as a video printer, for example, it is acceptable to playback still images as is, with its high pixel density. Further, when the pixel

density is regulated on the video printer side, means may be provided to convert the still image to that pixel density.

On the other hand, when the still image is shown on the display screen, a still image of a high pixel density may be converted to a pixel density matching the scan format of the display screen by appropriating the pixel density conversion means **2** used during recording for use during playback. Due to this structure, there is no need to exclusively provide pixel density conversion means for playback only, allowing marked simplification of the playback display circuit of the electronic camera or the playback process algorithm.

As described above, while the imaging means shares a recording process for still images and moving images, it is possible to suitably change over the image quality for still images and the image quality for moving images by the pixel density conversion means. Further, by changing over the pixel density conversion means, the moving image is suitably recorded as appropriate to the scan format of the display screen. Therefore, the pixel density of the still image is wholly unbound by the scan format of the display screen, allowing a flexible design suitable to the intended purpose of the structure.

While the imaging means shares a recording process for still images and moving images, it is possible to record still images with a higher image quality than that of moving images. Due to the buffer means temporarily storing still images, it is possible to reliably image still images even during recording of moving images.

Accordingly, it has been made possible for the operator to record, without any concern for whether it is during the recording of a moving image or a snapshot in which the operator is interested as a still image having a high image quality. Because the common component relating to the process within a field or the process within a frame of a coding conversion component has the dual use of processing still images and moving images, efficient simplification is possible of the structure, the calculation process algorithms, or the like, in an electronic camera. While the imaging means and the image compression means share the recording process for still images and moving images, it is possible to record a still image having a higher image quality than a moving image. Due to the buffer means temporarily storing still images, it is possible to reliably image a still image even when recording a moving image.

Accordingly, it has been made possible for the operator to record, without any concern for whether it is during the recording of a moving image or a snapshot in which the operator is interested as a still image having a high image quality. By changing over the changeover switch, the recording switch has a dual use as a switch activating the still image recording means and the moving image recording means. Therefore, the operational quality of the image recording operation has been enhanced.

The present invention has been described with particularity in connection with the specific embodiments. It should be appreciated, however, that changes may be made to the disclosed embodiments without departing from the invention as defined by the following claims.

What is claimed is:

1. A digital electronic camera comprising:

an imaging device that generates successive image signals;

an analog to digital converter that converts an output of the imaging device to digital image signals;

a compression unit that performs a first compression for digital moving images and a second compression, different from the first compression, for digital still images;

a mode selector that selects one of a moving image recording mode in which recording of moving images can be performed and a still image recording mode in which recording of still images can be performed;

a memory unit;

a display that includes a touch panel having a plurality of operation buttons for each camera function, wherein the plurality of operation buttons includes a mode change operation button for changing a mode between said moving image recording mode and said still image recording mode;

a recording unit that records the compressed digital moving images and the compressed digital still images into the memory unit; and

a control unit electrically connected to the compression unit, the mode selector, the display and the recording unit, the control unit causes the display to simultaneously display either of the images and information representative of the mode selected by the mode selector, and displayed positions of the mode change operation button for changing the moving image recording mode to the still image recording mode on the touch panel when the moving image recording mode is selected are same as displayed positions of the mode change operation button for changing the still image recording mode to the moving image recording mode on the touch panel when the still image recording mode is selected.

2. A digital electronic camera according to claim **1**, further comprising a housing, wherein the display and the mode selector are disposed on a same surface of the housing.

3. A digital electronic camera according to claim **1**, wherein the first compression is MPEG and the second compression is JPEG.

4. A digital electronic camera according to claim **1**, wherein a pixel number of a frame of the recorded moving images is lower than a pixel number of a frame of the recorded still images.

5. A digital electronic camera according to claim **1**, wherein the control unit causes the display to display the recorded moving images and the recorded still images.

6. A digital electronic camera according to claim **1**, wherein the control unit causes the display to display the image at a first display area of the display and to display the information representative of the mode selected by the mode selector at a second display area of the display, the second display area is different from the first display area.

7. A digital electronic camera according to claim **1**, wherein said control unit causes said display to simultaneously display a screen for a recording operation for recording images and a screen for an editing operation.

8. A digital electronic camera according to claim **1**, wherein a displayed position of an operation button for initiating recording of the moving image on the touch panel when the moving image recording mode is selected is same as displayed position of an operation button for initiating recording of the still image on the touch panel when the still image recording mode is selected.

* * * * *

EXHIBIT 1006

US005444482A

United States Patent [19]

Misawa et al.

[11] Patent Number: 5,444,482

[45] Date of Patent: Aug. 22, 1995

[54] **DIGITAL ELECTRONIC CAMERA FOR SELECTIVELY RECORDING A FRAME OF STILL IMAGE AND MOVIE FIELDS OF IMAGE IN A RECORDING MEDIUM**

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[73] Assignee: **Fuji Photo Film Co., Ltd.,** Kanagawa, Japan

[21] Appl. No.: **233,957**

[22] Filed: **Apr. 28, 1994**

[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **348/220;** 348/231; 358/335

[58] **Field of Search** 348/207, 220, 294, 317, 348/231, 208, 320, 230; 358/335, 906; H04N 5/225, 5/335; 382/56

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Primary Examiner—Joseph Mancuso
Assistant Examiner—Tuan V. Ho

[57] **ABSTRACT**

A manipulation of the shutter release button mechanism causes the first signal to be detected by the control processor, which selects in turn the still picture mode effecting still picture recording on a data recording medium. A further manipulation of the release button mechanism causes the second signal to be detected by the control processor, which selects in turn the movie picture mode effecting movie picture recording on the data recording medium. In the still picture mode, pixel signals generated by the image sensor are transferred on the frame basis, while in the movie picture mode, pixel signals are transferred on the interlaced field transfer basis. The pixel signals are converted into corresponding digital image data to be stored in the frame memory, from which the control processor read the stored image data. In the still picture mode, a frame of image data is sequentially read out from the memory and compressed as a still image to be recorded on the oprical disk. In the movie picture mode, part of a frame of image data is read out from the memory with any movement of the camera compensated for on the basis of signals obtained from the movement sensor and compressed as movie images to be recorded on the same optical disk.

10 Claims, 4 Drawing Sheets

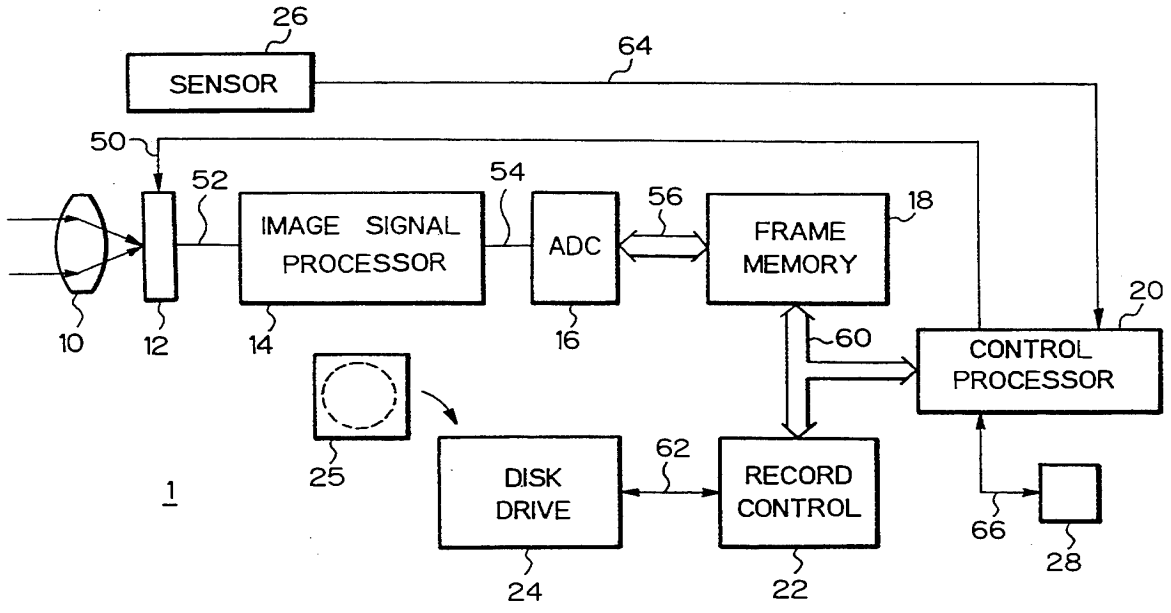
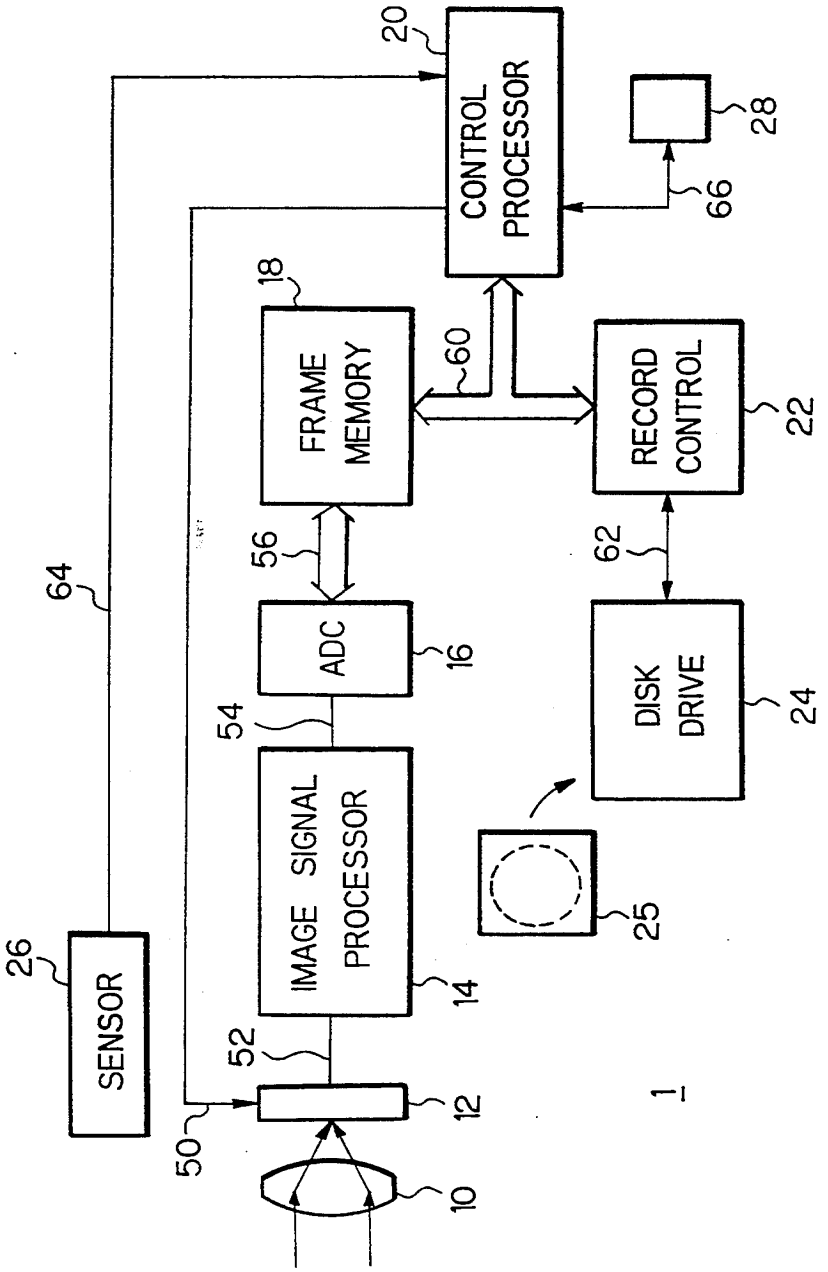


Fig. 1


20
CONTROL PROCESSOR
28
66
18
FRAME MEMORY
60
RECORD CONTROL
22
64
56
62
ADC
16
54
DISK DRIVE
24
IMAGE SIGNAL PROCESSOR
14
25
26
SENSOR
52
12
50
10
1

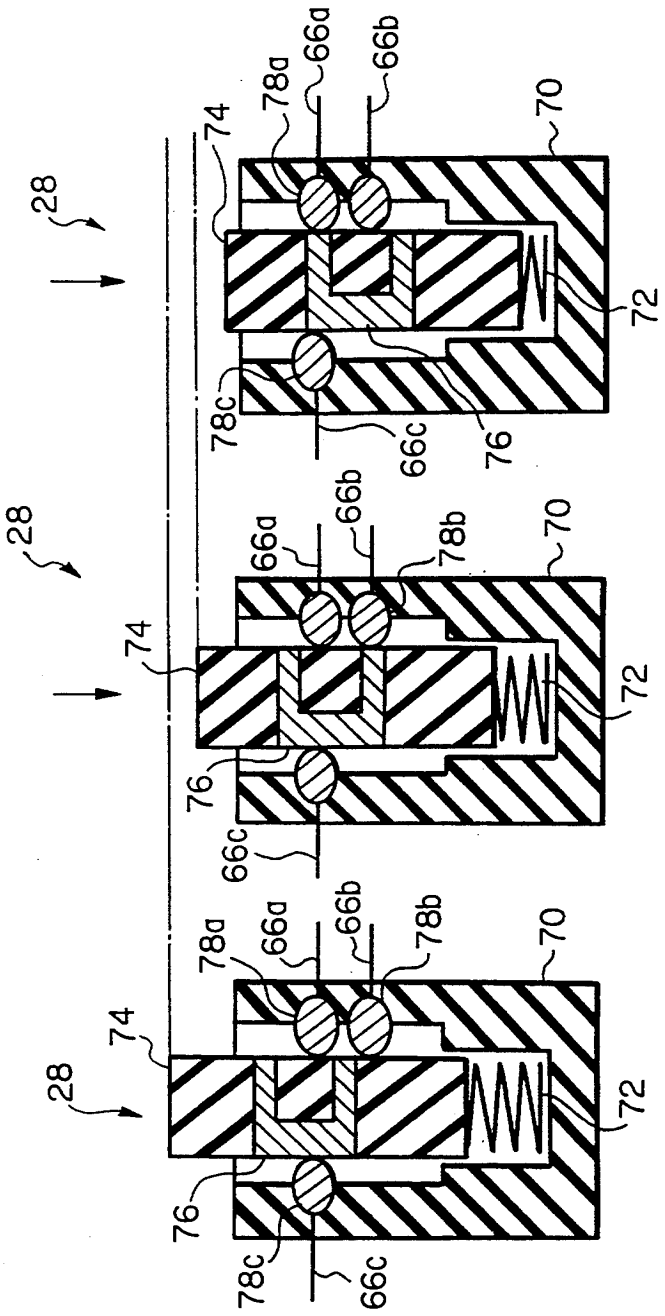


Fig. 2A Fig. 2B Fig. 2C

Fig. 3

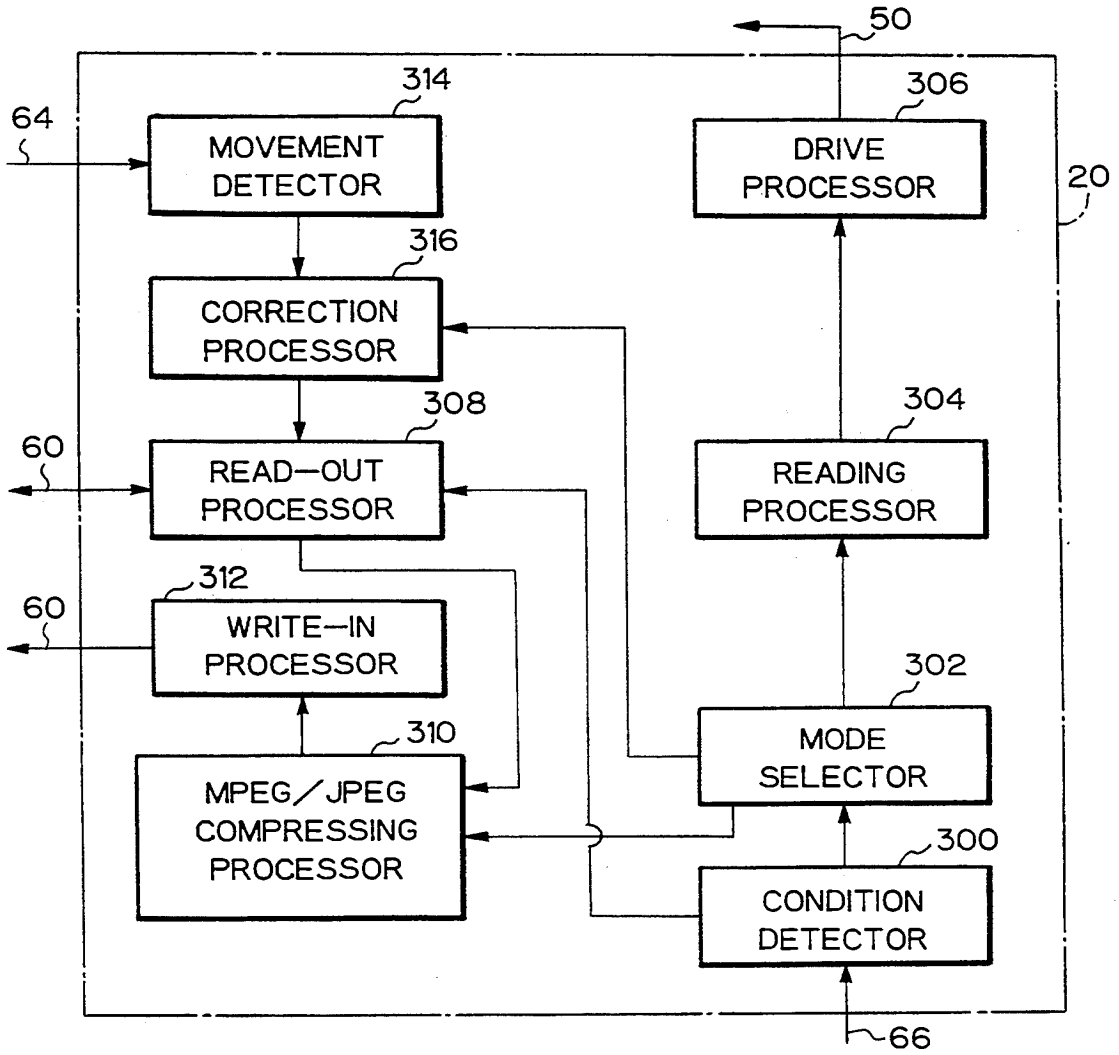

50
314
306
64
MOVEMENT DETECTOR
DRIVE PROCESSOR
20
316
CORRECTION PROCESSOR
308
304
60
READ—OUT PROCESSOR
READING PROCESSOR
312
60
WRITE—IN PROCESSOR
302
310
MODE SELECTOR
MPEG/JPEG COMPRESSING PROCESSOR
300
CONDITION DETECTOR
66

Fig. 4A

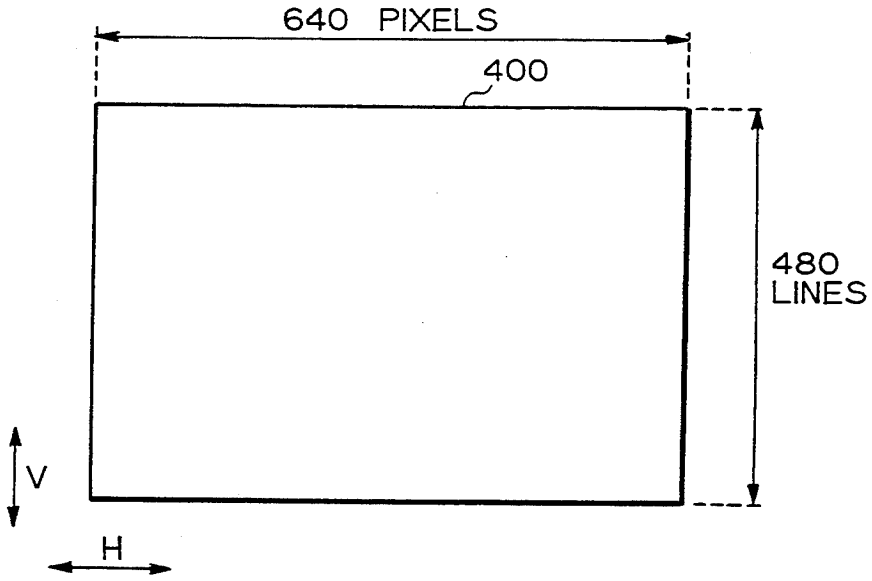
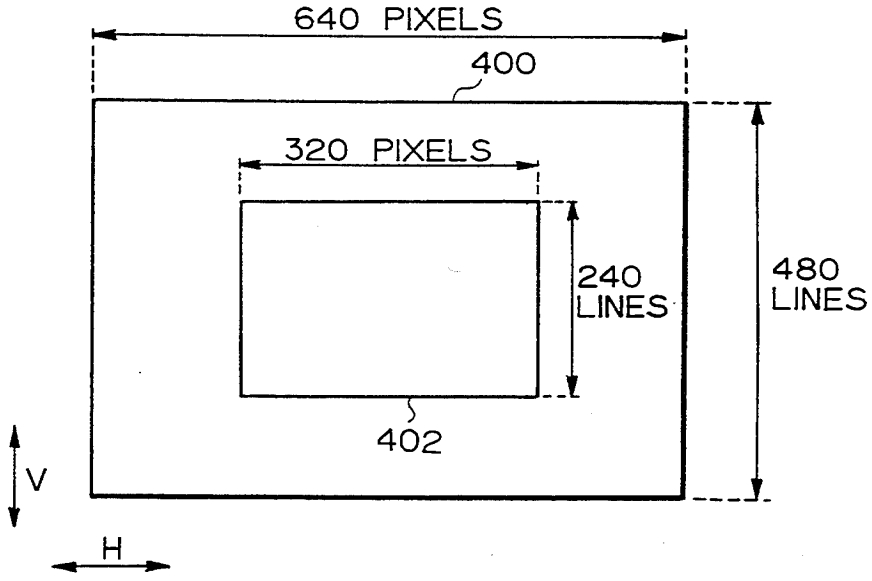

640 PIXELS
400
480
LINES
V
H

Fig. 4B


640 PIXELS
400
320 PIXELS
240
LINES
480
LINES
402
V
H

DIGITAL ELECTRONIC CAMERA FOR SELECTIVELY RECORDING A FRAME OF STILL IMAGE AND MOVIE FIELDS OF IMAGE IN A RECORDING MEDIUM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a digital electronic camera for photographing the image of an object, and more particularly to a digital electronic camera for capturing the image of an object and recording data representative of still and movie images in a single data recording medium.

2. Description of the Related Art

Recently, there are known imaging appliances, such as electronic still cameras capturing objective fields and storing image data representing still images of the fields in an integrated-circuit card memory device, and video camera-tape recorders adapted for capturing movie images of objective fields and recording on a magnetic tape or video tape video signals representing the movie images captured.

The integrated-circuit card memory for use with electronic still cameras has the storage capacity of several megabytes to several-ten megabytes, for example, The limited storage capacity of the card memories forces image data to be compressed by means of still image compression scheme in order-to efficiently utilize the limited storage capacity. In addition, magnetic tapes for use in video movie systems have image signals, representative of movie pictures, recorded in the form of frequency modulated signals. The image data or signals recorded in an image signal storage medium, such as integrated-circuit card memory or magnetic tape, are reproduced by a playback device exclusively adapted for the type of storage medium to be visualized on an image monitor such as a TV monitor device in the form of pictures of the object.

Under those circumstances, there are demands for capturing still and movie images of objects and recording them on a single storage medium. A mere assembling conventional video appliances to attain the capturing and recording of still and movie images in a single storage medium would increase the mass of, and harm the portability and operability of, the resultant assembly, resulting in increase of the cost of the assembly. The recording image data captured in a single storage medium makes it difficult to select a desired image quality suitable for recording both still and movie images of an object.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a digital electronic camera improved in operability and capable of capturing an objective field and storing image data representative of both still and movie images of the objective field in a single storage medium.

In accordance with the present invention, a manipulation of the shutter release button mechanism causes the first signal to be detected by the control processor, which will in turn select the still picture mode effecting still picture recording on a data recording medium. A further manipulation of the release button mechanism causes the second signal to be detected by the control processor, which will in turn select the movie picture mode effecting movie picture recording on the data recording medium. In the still picture mode, pixel signals generated by the image sensor are transferred on the frame basis, while in the movie picture mode, pixel signals are transferred on the interlaced field transfer basis. The pixel signals are converted into corresponding digital image data to be stored in the frame memory, from which the control processor read the stored image data. In the still picture mode, a frame of image data is sequentially read out from the memory and compressed as a still image to be recorded on the oprical disk. In the movie picture mode, part of a frame of image data is read out from the memory with any movement of the camera proper compensated for on the basis of signals obtained from the movement sensor and compressed as movie images to be recorded on the same optical disk.

BRIEF DESCRIPTION OF THE DRAWINGS

The objects and features of the present invention will become more apparent from consideration of the following detailed description taken in conjunction with the accompanying drawings in which:

FIG, **1** is a schematic block diagram showing a preferred embodiment of a digital electronic camera according to the present invention;

FIGS. **2A**, **2B** and **2C** show the cross sections in operation of the shutter release button mechanism included in the camera shown in FIG. **1**;

FIG. **3** is a schematic block diagram showing the functional elements of the control processor shown in FIG. **1**; and

FIGS. **4A** and **4B** show examples of the imaging field established by the illustrative embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. **1** of the accompanying drawings, a preferred embodiment of a digital electronic camera **1** in accordance with the present invention is apparatus for transducing an optical image of an object, not shown, formed by an optical lens **10** on an image sensor **12** into pixel signals representative of the optical image, processing the pixel signals in the form of digital image data, and recording the resultant image data on an optical disk **25** set in a disk drive **24**. Particularly, digital camera **1** is adapted to be operative in response to a manipulation of an operator to selectively record in optical disk **25** image data representing a still image of an object and consecutive images of the object in the form of movie pictures. In the following, portions of the digital camera not directly relevant to understanding of the invention are not shown and omitted from description due to mere simplicity. In the figures, signals are designated by the reference numerals designating connections on which the corresponding signals appear.

More specifically, digital electronic camera **1** comprises optical lens **10** forming the optical image of an object to be shot, image sensor **12** for producing pixel signals associated with the optical image thus formed, and an image signal processor **14** adapted for processing the pixel signals produced to develop image signals representative of the optical image captured. Digital camera **1** includes an analog-to-digital conventer (ADC) **16** for Converting the output from image signal processor **14** into image data containing corresponding digital values, a frame memory **18** for temporarily storing therein the image data, and control processor **20** adapted to compress the image data stored in frame memory **18** for the purpose of recording in optical disk

25 and also to control the overall operations of digital camera 1. Digital camera 1 further comprises record control 22 for controlling the recording of the thus compressed image data in optical disk 25, and disk drive 24, in which optical disk 25 is detachably mounted, for writing the image data developed from record control 22 on optical disk 25. Digital camera 1 is further equipped with a sensor 26 for sensing movement or viblation of camera 1, and a shutter release button mechanism 28 oprative in response to a manipulation of the operator for informing control processor 20 of when the operator intends to capture the image of an object and record the image data.

Image sensor 12 has an array of photosensitive cells and is adapted to transduce the optical image of an object formed on the photosensitive array into corresponding pixel signals. Image sensor 12 is, for example, comprised of a solid-state photosensitive device, such as charge-coupled device (CCD). The array of photosensitive cells may be covered with a color filter which separates the incident lights into the three primary colors, R, G and B, for example. Image sensor 12 is responsive to drive signals supplied to its input 50 from control processor 20 to drive the photosensitive array, which in turn produces electric charges associated with the optical image fromed in the frame read-out or field read-out fashion. The electric charges are developped on its output 52 in the form of pixel signals. Output 52 is interconnected to image signal processor 14.

As shown in FIG. 4A, the photosensitive array of image sensor 12 has an imaging field 400 including 640 photosensitive cells or pixels in its horizontal direction H to form a horizontal line and 480 lines in its vertical direction (V), thus including approximately three hundred thousand photosensitive cells or pixels. The array of photosensitive cells in imaging field 400 is driven by the drive signals supplied from control processor 20 to produce pixel signals from the respective cells.

Image signal processor 14 accomplishes image processings onto the pixel signals developed from image sensor 12 to produce suitable image signals. For example, image signal processor 14 amplifies and processes the pixel signals received on its input 52 to correct the gamma characteristics and clamp the black level to the reference level, forming image signals suitable for reproduction. Signal processor 16 delivers the produce image signals to the analog-to-digital conventer 16 connected to its output 54.

Analog-to-digital converter 16 converts the analog image signals to corresponding digital signals including digital values. More specifically, converter 16 samples the image signals fed to its input 54 at the predetermined intervals and quantizes the samples. The resultant quantized values are in turn encoded into corresponding digital data including 8 to 10 bits, for example. Converter 16 develops the resultant image data from its output 56 to frame memory 18 on a bit parallel basis.

Frame memory 18 stores therein the bits of image data. The bits of image data received on input 56 of frame memory 18 are stored in memory 18 on a image frame-by-frame basis. The frame of image data can be developed from frame memory 18 on a frame basis. Frame memory 18 is operative in response to the read-out control signals provided from control processor 20, described later, to produce the image data stored from its output 60. Output 60 is interconnected to control processor 20 by a bus 60 on one hand, and separately to record control 22 on the other hand.

Control processor 20 reads out the image data stored in frame memory 18 and adapts the readout data to the form of data suitable to recording in optical disk 25. In addition, control processor 20 controls the overall operations of the circuity of digital camera 1. More specifically, control processor 20 compresses the image data read out from frame memory 18 and appearing on bus 60, and provides record control 22 with the resultant, compressed image data via bus 60. In addition, control processor 20 also controls image sensor 12, frame memory 18 and record control 22 in response to a movement of the camera proper sensed by sensor 26 and/or manipulations of the operator notified by shutter release button mechanism 28. Further ditails will be described later.

Record control 22 controls disk drive 24 in order to record the image data processed by control processor 20 in optical disk 25. Record control 22 generates, under the control of control processor 20, drive signals driving disk drive 24. Additionally, record control 22 modulates the image data, adapted for recording and provided from control processor 20 over bus 60, by means of the so-called eight-to-fourteen modulation (EFM) with error correction control added thereto to produce recording data. Record control 22 provides disk drive 24 with the thus generated drive signals and recording data from its output 62.

Disk drive 24, on which optical disk 25 is detachably mounted, is responsive to drive signals provided from record control 22 to write the image data received by its input 62 onto optical disk 25. More specifically, disk drive 24 includes a combination of an optical transducer and a magnetic recording transducer, not shown, which are adapted to write image data produced by drive control 22 on optical disk 25. Disk drive 24 also includes a drive mechanism for driving optical disk 25 in rotation of the constant linear velosity fashion with reference to the radial position of the optical transducer on disk 25. Optical disk 25 mounted on disk drive 24 may advantageously in the preferred embodiment be a rewritable data recording medium. Such as a mini-disk, ramdomly accessible at higher access rate. The mini-disk is a sort of optical magnetic recording medium having a recording area formed on which data is rewritably recorded. The rewritable recording area has a guide groove cut on its surface for use in tracking by the optical transducer, along which groove data tracks are formed. Sensing of the groove allows the optical transducer to seek tracks in the radial direction, thereby establishing data searching on a random access basis. Disk drive 24 supplies the magnetic transducer with a drive current associated with write data received by its input 62. The optical transducer is also adapted to illuminate the tracks on optical disk 25 with a laser beam responsive to the data read-out and write-in modes. The optical transducer also functions as sensing part of the laser beam reflected from the tracks on optical disk 25 to produce electric signals associated with the sensed light to record control 22.

Sensor 26 serves to sense how digital camera 1 physically moves and produce corresponding electric signals over a connection 64. The electric signals represent an unintentional movement or vibration of the camera body proper which would cause blur in a picture reproduced. Sensor 26 may advantageously include a piezoelectric gyroscopic transducer, which is mounted on a circuit board of digital camera 1 and adapted to sense any mechanical movement thereof. Sensor 26 also in-

cludes an oscillator for generating pulse signals which are in turn supplied to the gyroscopic transducer to mechanically vibrate the latter, as well as an amplifier for amplifying the signal components responsively sensed to changes in vibration by transducer. Sensor **26** provides control processor **20** with the sensed signals representing the unintentional movement of the camera proper.

Shutter release button mechanism **28** functions as being responsive to a shutter release button **74**. FIG. **2**, and informing control processor **20** of when release button **74** is depressed to allow the image data captured to be recorded on optical disk **25**. Shutter release button mechanism **28** includes a switch circuit for producing an ON and OFF signal responsive to whether or not button **74** is depressed. More specifically with reference to FIGS. **2A**, **2B** and **2C**, exemplarily showing the cross sections of release button mechanism **28**, the latter comprises a support **70** made of non-electric conductive material, which has a central recess formed which receives a spring **72** on its bottom. Spring **72** supports thereon a column-like button member **74**, which is movable in its longitudinal direction in the recess. As seen in FIG. **2A**, for example, release button **74** is made of non-conductive material and has its middle portion **76** formed, approximately in the middle of column **74**, of electrically conductive material. Middle portion **76** is referred to as a common conductive member. In the figures, the left portion of button member **74** has part of common conductive member **76** extending in the longitudinal direction of button member **74** with a certain width, and the uppermost and lowermost parts of common conductive member **76** are elongated towards the right portion, in the figure, of the cylindrical surface of button member **74**, as seen in the figures. In the inner cylindrical surface of the recess of support member **70**, contact members **78***a* and **78***b* are disposed which are made of electro-conductive material, such as rubber with particles of electro-conductive substance dispersed therein, so as to be brought into contact, as button member **74** is being depressed, with common conductive member **76**. Also in the part of the inner cylindrical surface of the recess which is opposite to contacts **78***a* and **78***b*, there is provided another contact **78***c* which is always made in electrical contact with the longitudinally extending porion of common conductive member **76**, as shown in FIG. **2A**. Contacts **78***a*, **78***b* and **78***c* are coupled to electrical connections **66***a*, **66***b* and **66***c*, respectively, which are connected to control processor **20**, FIG. **1**.

Common conductive member **76** is, under the normal condition, enabled by spring **72** to the position such that it is not get in contact with contacts **78***a* and **78***b*, as shown in FIG. **2A**. When shutter button member **74** is depressed downward to press spring **72** to the position shown in FIG. **2B**, common conductive member **76** is brought into contact with contact **78***b* to electrically connect connections **66***b* and **66***c*. When shutter button member **74** is further depressed downward to the position shown in FIG. **2C**, common conductive member **76** is made in contact with contact **78***a* to electrically connect connections **66***a* and **66***c* while conductive member **76** leaves contact **78***b* to disconnect connection **66***b* from connections **66***c*. Hereinafter, the situation when conductive member **76** is connected with contact **78***b* is referred to as the first ON connection and the signal conveyed then is as the first signal. Also the situation when conductive member **76** is connected with contact **78***a* is referred to as the second ON connection and the signal conveyed then is as the second signal. Shutter button mechanism **28** is thus adapted to convey the first and second signals over connection **66** to control processor **20**, FIG. **1**. The switching mechanism may be comprised of make and break switches.

Now with reference to a schematic block diagram shown in FIG. **3**, control processor **20** will be described in detail. As shown in the figure, control processor **20** includes a condition detector **300**, a mode selector **302**, a reading processor **304**, a drive processor **306**, a read-out processor **308**, a data compressing processor **310**, a write-in processor **312**, a movement detector **314** and a correction processor **316**.

Condition detector **300** functions as being operative in response to the first and second signals obtained from shutter button mechanism **28** to determine the first and the second ON connections. Condition detector **300** is adapted to deliver the first and second condition signals representing the start and end of the first and second ON connections thus determined, respectively, to mode selector **302** and read-out processor **308**.

Mode selector **302** is responsive to the condition signals delivered from condition detector **300** to select the operative modes of disk camera **1**. More specifically, mode selector **302** selects, when having received the first condition signal, the still picture mode in which a still image is recorded on optical disk **25**, and informs reading processor **304**, data compressing processor **310** and correction processor **316** of the still picture mode, thus the still picture mode being set in digital camera **1**. Mode selector **302** selects, when having received the second condition signal, the movie picture mode in which movie images are recorded on optical disk **25**, and informs reading processor **304** and correction processor **316** of the movie picture mode, thus the movie picture mode being set in digital camera **1**.

Reading processor **304** is responsive to the operative mode informed from mode selector **302** to set a reading scheme, as to how the electric charges generated in image sensor **12** are read out. When reading processor **304** is informed from mode selector **302** of the still picture mode, then it causes drive processor **306** to set the frame transfer mode in image sensor **12**. When reading processor **304** is informed from mode selector **302** of the movie picture mode, then it causes drive processor **306** to set the field transfer mode in image sensor **12**.

Drive processor **306** drives image sensor **12** pursuant to the reading scheme set by reading processor **304**. Drive processor **306** generates, when the frame transfer mode is set by reading processor **304**, a drive signal causing the frame of electric charges to be transferred from the photosensitive array **400**, FIG. **4A**, of image sensor **12**. When the field transfer mode is set by reading processor **304**, drive processor **306** generates, another drive signal causing the fields of electric charges to be transferred from the photosensitive array **400** of image sensor **12** in the interlacing fashion. The latter drive signal is generated by drive processor **306** at longer intervals between image frames so as to allow the photosensitive array **400** of image sensor **12** to be sufficiently exposed with imagewise light. This intends to increase the virtual sensitivity of the photosensitive array **400**. The drive signals are developed from output **50** of drive processor **306**.

Read-out processor **308** is adapted to read out the image data stored in frame memory **18** in response to the condition signals provided from condition detector

300. For example, when read-out processor 308 is informed of the first condition signal from condition detector 300, it reads out a frame of image data sequentially from frame memory 18 forming an image frame 400, FIG. 4A. In other words, the image data corresponding to the entire area of the imaging field 400, FIG. 4A, is read out from frame memory 18. When read-out processor 308 is informed of the second condition signal from condition detector 300, it reads out part of the image data stored in frame memory 18. More specifically, the part of image data corresponding to a unit area, e.g. 402 in image frame 400, FIG. 4B, is read out from frame memory 18. In the instant example, rectangular area 402 includes 320 pixels in its horizontal direction and 240 lines in its vertical direction. Read-out processor 308 reads out a corresponding plurality of units of image data to the period in which it is informed of the second condition signal.

Area 402 may be modified in accordance with the situations in which digital camera 1 is used, for example. This permits the size of the visualized image frame to continuously be changed during imaging operation by reading out the image data corresponding to the changeable size of area 402, or the visualized image frame, from frame memory 18. In this case, the image data thus read out changeably in size may be used by a playback device with a certain processing such as interpolation effected to accomplish zooming effect, for example.

Read-out processor 308 is also adapted to compensate for blur which would otherwise be caused by unintentional movement of camera 1 which may be included in the image data stored in frame memory 18. Read-out processor 308 responds to correction data provided from correction processor 316 to alter accordingly the position at which the image data is read out. In the instant embodiment, read-out processor 308 is provided with a correction signal from correction processor 316 during the period in which it receives the second condition signal from condition sensor 300. Read-out processor 308 changes in response to the correction signal the position of area 402 within imaging field 400, and generates the address representing the altered position of area 402. Image data corresponding to the altered area will be read out from frame memory 18 in response to the new address. The image data read out from frame memory 18 is in turn transferred to data compressing processor 310 under the control of read-out processor 308.

Data compressing processor 310 is adapted to compress the image data transferred from read-out processor 308, Data compressing processor 310 selects the compressing scheme on the basis of the still and movie picture modes selected by mode selector 302, and compresses the image data in accordance with the selected compressing scheme. With the preferred embodiment illustrated, compressing processor 310 includes two compressing functions or circuits, not shown, including still picture and movie picture compression processings. To the instant embodiment, advantageously applicable are the JPEG (Joint Photograph Coding Experts Group) system as the still picture compressing process and the MPEG (Moving Picture Coding Experts Group) system as the movie picture compressing process. The resultant compressed image data will be transferred to write-in processor 312.

Write-in processor 312 performs processings on the image data compressed by data compressing processor 312. Write-in processor 312 converts the image data to the predetermined format applicable to optical disk 25, and generates a write-in signal causing the converted image data to be recorded on optical disk 25 to deliver the signal to record control 22. The resultant, converted image data will in turn be conveyed from output 60 of write-in processor 312 over bus 60 to record control 22.

Movement detector 314 receives a movement signal from sensor 26 on connection 64 and generates movement data representing how digital camera moves or vibrates to cause blur to be involved in a picture. The movement data includes moving amount data representing an angular velocity at which digital camera 1 rotates, and directional data representing the direction in which camera 1 moves by the hirizontal and vertical components. The movement data thus generated is delivered to correction processor 316.

Correction processor 316 is responsive to the movement data provided by movement detector 314 to form correction data used for compensating for blur due to the movement of camera 1 in movie pictures taken by camera 1. Correction data includes correction values by which area 402 is to be shifted in position and which is calculated on the basis of the moving amount and directional data included in the movement data. While the movie mode is selected by mode selector 302, correction processor 316 supplies read-out processor 308 with the correction data thus calculated.

In operation, lens 10 is directed to an object to be imaged to allow the image of the object is formed on photosensitive array 400 of image sensor 12. Shutter button mechanism 28 is then manipulated. As button member 74 is depressed, electrical contact 78*b* of shutter button mechanism 28 is first brought into contact with common conductive member 76, thus conducting connections 66*b* and 66*c* to generate the first signal to condition detector 300 of control processor 20. Condition detector 300 recognizes by the first signal the status of button member 74 to generate the first condition signal to mode selector 302 and reading prpcesspr 304.

Mode selector 302 selects the still picture mode and informs reading processor 304, data compressing processor 310 and correction processor 316 of the still picture mode on the basis of the first condition signal to set the still picture mode. Reading processor 304 sets the frame transfer mode of pixel signals of image sensor 12 to drive processor 306 accordingly. The latter 306 produces drive signals on output 50 which permit image sensor 12 to accomplish the frame transfer. Image sensor 12 responds to the drive signals and develops sequentially pixel signals representative of an image of the object in a frame transfer fashion on output 52 to image signal processor 14.

The pixel signals, received by image signal processor 14, are amplified, and made the processings such as color correction, gamma correction and clamping to be developed from output 54. The image signals 54 are then converted into corresponding digital data by analog-to-digital converter 16, the latter data being temporarily stored in frame memory 18.

A frame of image data stored in frame memory 18 is read out udder the control of read-out processor 308 of control processor 20. Read-out processor 308 has been supplied from condition detector 300 with the first condition signal so that the entire pixel data included in imaging field 400 is sequentially read out from frame memory 18 to data compressing processor 310. In that case, the image data thus read out is subject to the still picture compression processings by compressing pro-

cessor **310** in response to the still picture mode set by mode selector **302**. The resultant, compressed image data will then be transferred to write-in processor **312**. Write-in processor **312** converts the input image data to the predetermined format applicable to optical disk **25**. Record control **22** is supplied with the write-in signal and thereafter the converted image data over output **60** from write-in processor **308**.

Record control **22** produces drive signals response to the write-in signal, and also modulates the image data received by the eight-to-fourteen modulation to develop the modulated image data from its output **62** to disk drive **24**. The image data is then fed to the magnetic transducer of disk drive **24** to drive the latter, thereby generating the corresponding magnetic fields onto the recording surface of optical disk **25**. The optical transducer of disk drive **24** produces a laser beam onto the opposite surface of optical disk **25**, thereby accomplishing the image data recording.

Shutter release button member **74** will further be depressed so as for contact **78***a* to be made in contact with common conductive member **76**, causing connections **66***a* and **66***c* to be connected to each other. The second signal is then produced to condition detector **300**. Condition detector **300** produces the second condition signal to mode selector **302** and read-out processor **308**. In response, mode selector **302** selects the movie picture mode and set it to reading processor **304**, data compressing processor **310** and correction processor **316**. Reading processor **304** sets drive processor **306** to the field transfer mode. Drive processor **304** produces on output **50** therefrom drive signals allowing image sensor **12** to produce pixel signals in the interlaced field transfer fashion. The pixel signals are then developed from the photosensitive array of image sensor **12** in a field transfer mode on output port **52** to image signal processor **14**.

The pixel signals, received by image signal processor **14**, are amplified and processed by processor **14**, and then converted into corresponding digital data by analog-to-digital converter **16**, to be temporarily stored in frame memory **18** in sequence. The image data stored in frame memory **18** is read out under the control of read-out processor **308**, which has been supplied from condition detector **300** with the second condition signal so that the pixel data associated with area **402** included in imaging field **400**, FIG. **4B**, is read out from frame memory **18**.

Sensor **26** senses a movement of digital camera **1** to produce the movement signal to movement detector **314**. Movement detector **314** then generates movement data to correction processor **316**. Correction processor **316** is, while set to the movie picture mode, responsive to the movement data to establish correction data, which will in tun be transferred to read-out processor **308**.

Read-out processor **308**, having received the second condition signal, corrects the position of area **402** with respect to imaging field **400**. The image data involved in area **402**, with its position modified, is then read out from frame memory **18**. Following the completion of reading out the image data of area **402**, read-out processor **308** continues to read out the renewed, corresponding image data involved in area **402** consecutively from frame memory **18** with the position of area **402** corrected in response to the correction data during the period while it receives the second condition signals, thus the image data corresponding to a plurality of areas **402** being consecutively read out from frame memory in the movie picture fashion.

The image data read out by read-out processor **308** is supplied to data compressing processor **310**, which has been set to the movie picture mode. Compressing processor **310** accomplishes the movie data compression on the input image data in response to the movie picture mode. The resultant, compressed data is sequentially delivered to write-in processor **312**, which in turn converts the data into the predetermined recording format. Write-in processor **312** produces the write-in signal on output port **60** to record control **22**. A sequence of the image data, corresponding to a plurality of movie image frames to be visualized, is thus transferred to record control **22**.

Record control **22** produces drive signals in response to the write-in signal, and also modulates the image data received by means of the eight-to-fourteen modulation to develop the modulated image data from its output **62** to disk drive **24**. The image data is then fed to the magnetic transducer of disk drive **24** to drive the latter, thereby accomplishing the image data recording in the same manner as described earlier in respect of the still image recording.

Upon shutter release button member **74** being released from its depressed position to restore its normal position shown in FIG. **2***a*, and also the image data recording and all required processings associated therewith being completed, control processor **20** shifts its status to waiting for a following input from shutter release button mechanism **28**. In the course of releasing shutter button member **74** to its home position, the first signal is once sensed by condition detector **300** of control processor **20**. The first signal thus sensed may be neglected by condition detector **300** as an ineffective signal.

In summary, the illustrative embodiment images an object to selectively record the images in **25**. the still and movie picture modes in optical disk In order to record image data in the still mode, a full frame of image data is read out from frame memory **18** and processed whereas, in order to-record image data in the movie picture mode, part of image data corresponding to area **402** within imaging field **400** is read out from frame memory **18** to be processed. Area **402** is smaller than the entire frame of imaging field **400**, thus utilizing portions of the image data associated with a peripheral portion adjacent to and surrounding area **402** for the purpose of compensating for blur which would othrewise be caused in a reproduced picture by unintentional movements of digital camera **1** proper. Image data coming from the smaller area used for the movie picture reproduction than the whole area of an image frame will reduce the period of time required for compressing the image data with part of the remaining data contained in the portions surrounding area **402** also effectively utilized. In addition, the smaller amount of the image data of area **402** than the entire frame **400** of image data is used for reproducing movie pictures so as to allow image sensor **12** to be exposed in the period of time sufficient to expose the photosensitive cells with image-wise light to produce an effective level of pixel signals. That allows motion pictures to be reproduced without flickers by means of the so-called frame afterimage effect, causing natural movie pictures to be reproduced. That could also permit a sufficient exposure period of time to be given to image sensor **12** so as to enhance the photosensitivity thereof.

With the preferred embodiment described above, a high-speed accessible data recording medium such as a mini-disk is applicable, and the shutter release button mechanism is employed as shown and described with reference to FIGS. 2A, 2B and 2C. This follows that easy and rapid switching between the still and movie picture modes is accomplished. Moreover, in either of the imaging modes, one can loose an appropriate timing at which he or she intends to capture objective images to achieve easy recording of desired images.

With the illustrative embodiment described above, drive processor **306** generates, in the field transfer mode, the drive signal which elongates the exposure period of time assigned to one frame of image with time intervals between frames increased, thereby achieving natural reproduction of pictures caused by the frame afterimage effect together with increase in sensitivity of the image sensor. The invention is not restricted only to that method, but may be applicable to the type of motion picture recording in which the pixel signals are transferred from the image sensor at the same shutter speed, or pixel signal transfer rate, as the still image recording. Even in that case, each of the motion picture frames can be recorded without being accompanied by blur which would otherwise be caused by unintentional movements of the digital camera as in the case of the still picture mode. Those still and movie images are allowed to be defined as image data files, which permit random-access data retrieval of the image data recorded on optical disk **25**.

According to the invention, there is provided a digital electronic camera in which the still and movie picture modes are easily selected by means of a simplified operation of the input device. The simplified operation causes data of both still and movie images to be stored in a single data recording medium. Additionally, the disk drive device can select a drive manner suitable for an imaging device to produce still and movie pictures, and the image data read out from a frame memory is compressed suitable for the still and movie picture recordings. Image data representative of still and movie images can appropriately be recorded in a single data recording medium by a simplified operation.

While the present invention has been described with reference to the particular illustrative embodiment, it is not to be restricted by the embodiment but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiment without departing from the scope and spirit of the present invention.

What is claimed is:

1. A digital electronic camera comprising:

imaging means for capturing an image of an object to be photographed and generating a corresponding electric signal;

signal converter means for converting the electric signal into corresponding, digital image data;

storing means for storing therein the image data:

processor means for processing the image data stored in said storing means;

recording means for recording the processed image data in a data recording medium; and

input means for informing said processor means of either a first condition or a second condition when operated, the first condition defining a first operative mode, in which a still image of an object is to be recorded in the data recording medium, the second condition defining a second operative mode, in which movie images of the object are to be recorded in the data recording medium;

said processor means comprising:

condition detector means for determining which of the first condition or the second condition is informed by said input means;

read-out means operative in response to said condition detector means for reading out the image data from said storing means;

data compressing means for compressing the image data read out from said storing means;

write-in means for providing said recording means with the compressed image data;

mode selector means operative in response to said condition detector means for selecting either the first operative mode or the second operative mode; and

drive means operative in response to said mode selector means for determining how to drive said imaging means;

said data compressing means comprising;

first compressing means operative in response to the first operative mode for compressing a frame of image data representing a still image of the object; and

second compressing means operative in response to the second operative mode for compressing at least part of a consecutive plurality of fields or at least part of a consecutive plurality of frames of image data corresponding to movie images of the object.

2. A camera in accordance with claim **1**, wherein

said drive means is responsive to the first and second operative modes to generate first and second drive signals, respectively, causing said imaging means to develop the electric signal on frame and field bases, respectively;

said read-out means being responsive to the first operative mode to read out the image data stored in said storing means, and to the second operative mode to read out consecutively part of the image data stored in said storing means in a period of time associated with the second condition informed by said input means.

3. A camera in accordance with claim **2**, further comprising sensor means for sensing a movement of said camera to generate correspondingly an additional electric signal;

said processor means further comprising:

movement detector means operative in response to the additional electric signal for producing movement data associated with the additional electric signal; and

correction means operative in response to the movement data and the second operative mode for producing correction data;

said read-out means being responsive to the correction data to modify a position of the part of the image data and to read out the part of the image data in the modified position from said storing means to thereby compensate for a movement between the consecutive parts of image data read out from said storing means.

4. A camera in accordance with claim **2**, wherein the second drive signal is formed to cause said imaging means to develop the electric signal on the field basis in a period of time substantially longer than a period of

time in which said imaging means develops the electric signal on the frame basis.

5. A camera in accordance with claim 1, wherein said input means comprises switch means having a first stage at which said switch means informs, in operation, said processor means of the first condition, and a second stage at which said switch means informs, in operation, said processor means of the second condition.

6. A camera in accordance with claim 1, wherein said data recording medium comprises an optical disk on which data such as image data is to rewritably be recorded.

7. A digital electronic camera comprising;

an image sensor for capturing an image of an object to be photographed and generating a corresponding electric signal;

a signal converter for converting the electric signal into corresponding, digital image data;

a storage circuit for storing therein the image data;

a processor for processing the image data stored in said; storage circuit;

a recorder circuit for recording the processed image data in a data recording medium; and

an input device for informing said processor of either a first condition or a second condition when operated, the first condition defining a first operative mode in which a still image of an object is to be recorded in the data recording medium, the second condition defining a second operative mode in which movie images of the object are to be recorded in the data recording medium;

said processor comprising;

a condition detector circuit for determining which of the first condition or the second condition is informed by said input device;

a read-out circuit operative in response to said condition detector circuit for reading out the image data from said storage circuit;

a data compressing circuit for compressing the image data read out from said storage circuit;

a write-in processor circuit for providing said recorder circuit with the compressed image data;

a mode selector circuit operative in response to said condition detector circuit for selecting either the first operative mode or the second operative mode; and

a driver circuit operative in response to said mode selector circuit for determining how to drive said image sensor;

said data compressing circuit comprising;

a first compressing circuit operative in response to the first operative mode for compressing a frame of image data representing a still image of the object; and

a second compressing circuit operative in response to the second operative mode for compressing at least part of a consecutive plurality of fields or at least part of a consecutive plurality of frames of image data corresponding to movie images of the object.

8. A camera in accordance with claim 7, wherein

said driver circuit is responsive to the first and second operative modes to generate first and second drive signals, respectively, causing said image sensor to develop the electric signal on frame and field bases, respectively;

said read-out processor circuit being responsive to the first operative mode to read out the image data stored in said storage circuit, and to the second operative mode to read out consecutively part of the image data stored in said storage circuit in a period of time associated with the second condition informed by said input device.

9. A camera in accordance with claim 8, further comprising a sensor device for sensing a movement of said camera to generate correspondingly an additional electric signal;

said processor further comprising:

a movement detector circuit operative in response to the additional electric signal for producing movement data associated with the additional electric signal; and

a correction circuit operative in response to the movement data and the second operative mode for producing correction data;

said read-out processor circuit being responsive to the correction data to modify a position of the part of the image data and to read out the part of the image data in the modified position from said storage circuit to thereby compensate for a movement between the consecutive parts of image data read out from said storage circuit.

10. A camera in accordance with claim 8, wherein said input device comprises a manually operable switch having a first stage at which said switch informs, in operation, said processor of the first condition, and a second stage at which said switch informs, in operation, said processor of the second condition.

* * * * *

EXHIBIT 1007

DECLARATION OF EDWARD LANG

I, Edward Lang, declare and state as follows:

1. I am Systems Operation Administrator at Casio America, Inc. ("Casio") and have held that position since 1988. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so under oath.

2. I have reviewed certain sales record kept at Casio to determine the sales and dates of the Casio QV-8000SX digital camera. The sales record was created during the regular course of business at Casio, at or around the time that each sale recorded in the sales record was made. Through my review, I confirmed that the Casio QV-8000SX digital camera was first sold in the United States in April 1999. Approximately twenty-five QV-8000SX cameras were sold in 1999. Casio did not restrict its sale of the QV-8000SX cameras, which meant that any person could purchase the camera in 1999.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed on February 11, 2020, in Dover, New Jersey.

EDWARD LANG

EXHIBIT 1008

DECLARATION OF GRACE SILLER

I, Grace Siller, declare and state as follows:

1. I am the Director of Customer Service and Support at Casio America, Inc. ("Casio"). I have been employed by Casio since 2003, and have held the current position since 2016. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so under oath.

2. In 1999, it was Casio's regular business practice to include a hardcopy (i.e., a paper copy) of the User's Guide for QV-8000SX with each sale of the QV-8000SX digital camera product and specifically, to include a hardcopy of the User's Guide in the product packaging containing the QV-8000SX digital camera. There were no restrictions placed on the purchaser's use of the User's Guide for QV-8000SX included with the sale of the QV-8000SX camera. Specifically, there was no requirement of confidentiality of the User's Guide for any purchaser of the QV-8000SX digital camera.

3. Attached hereto as Exhibit A, bearing bates numbers CASIO000119 through CASIO000180, is a true, complete, and correct copy of a User's Guide for the Casio QV-8000SX digital camera product (the "QV-8000SX Manual" or "Manual"). The hardcopy of the Manual was and has been retained in Casio's archived files. Casio's regular business practice has been to maintain an archive of user manuals shipped with the sold product.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed on February 12, 2020 in Dover, New Jersey.

Grace Siller

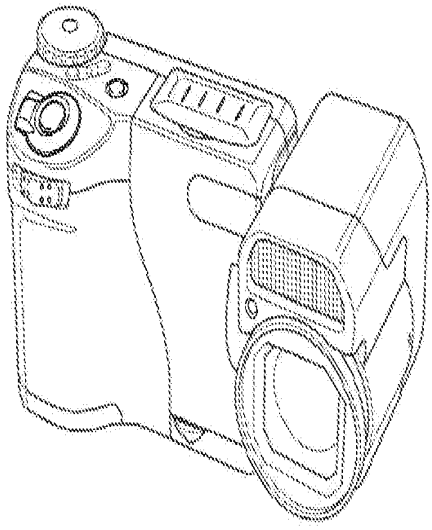
GRACE SILLER

LCD Digital Camera

QV-8000SX

DPOF

User's Guide



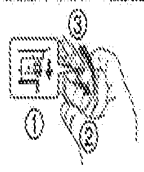
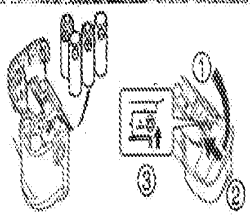
If you need help with your camera, please call: 1(800)435-7732

CASIO

QUICK REFERENCE

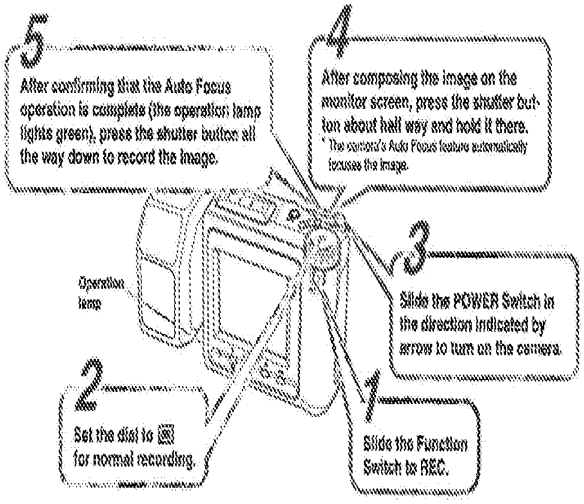
The section provides a general outline of operational procedures.

Loading Batteries (page 38)
Setting the Current Date and Time (page 44)

1	2	3
		• Be sure to use the procedure on page 44 to set the time and date before using the camera for the first time. • File name assignment and time stamping will not be performed correctly if the time and date are wrong.
On the bottom of the camera, slide the battery compartment cover lock towards the front of the camera (①) to release the cover. Grasping both sides of the battery compartment cover, swing it open (②, ③).	Load batteries so their plus (+) and minus (–) ends are facing as shown in the illustration. Close the battery compartment cover (①, ②), and then slide the battery compartment cover lock towards the back of the camera to lock the cover in place (③).	

QUICK REFERENCE

Recording Images (page 46)

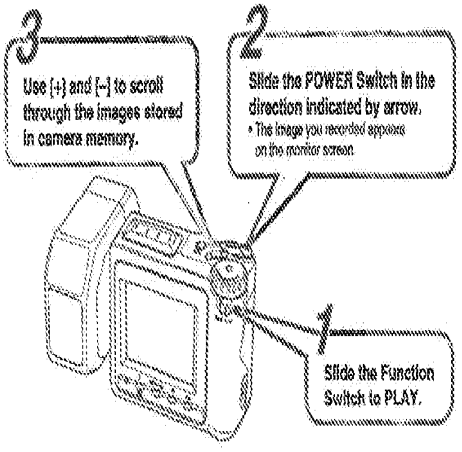


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EXHIBIT A

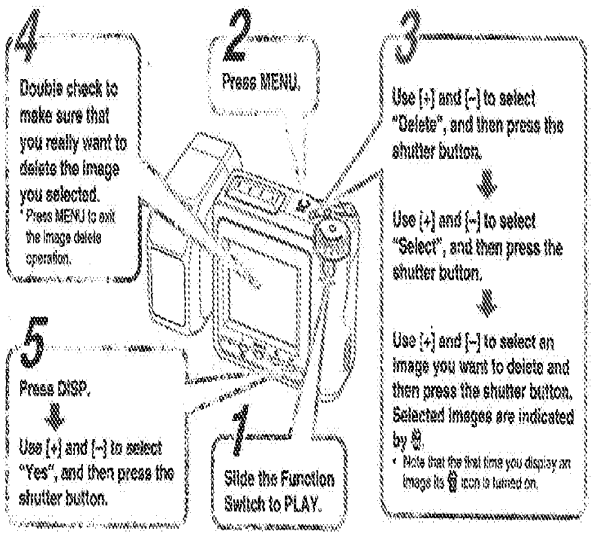
QUICK REFERENCE

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QUICK REFERENCE

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EXHIBIT A

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Congratulations upon your selection of the QV-R40/R51 LCD Digital Camera.
To get the most out of the QV-R40/R51, be sure to carefully read this manual and follow the instructions contained in it.

QUICK REFERENCE

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CONTENTS

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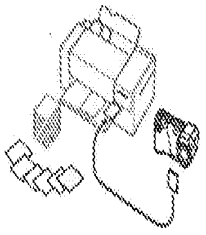
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FEATURES

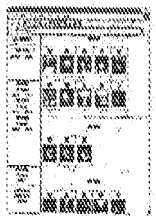
Continuous recording (page 57)
Continuous recording at high-quality images at 0.35-second intervals is just like have a motor drive on the camera.

DCF Data Storage (page 108)
DCF (Design rule for Camera File system) data storage protocol provides image cross-compatibility between the digital camera and printers.

Digital Print Order Format (DPOF) (page 93)
Images can be easily printed in the sequence you want using a DPOF compatible printer. DPOF can also be used by professional print services when specifying images to produce prints.



Simple image management (page 106)
Images are stored on a large-capacity CompactFlash memory card. A new Card Browser feature produces thumbnails of all images on a card quickly and easily.



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EXHIBIT A

Movie and panorama images (pages 60, 61)

A buffer lets you capture images of events that occurred before you pressed the shutter button.
A built-in function lets you combine up to nine images into breathtaking panoramas.

Easy-to-understand graphic interface (page 32)

All camera operations can be performed on graphic based interactive menu screens. CASIO high-resolution HAST LCD makes screen images clearer and more colorful than ever before.

CASIO original metering system

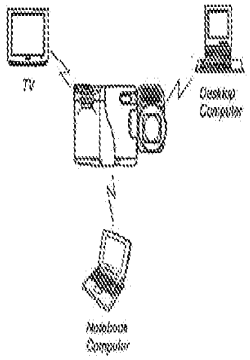
Light metering includes innovative multi-pattern metering.

Megapixel CCD

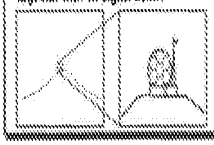
Images are recorded by a 1.31-megapixel CCD for amazing resolution and clarity.
Some slight image noise may be created when using slow shutter speeds.

Easy connection to other devices (page 69)

USB, DIGITAL, and VIDEO OUT terminals provide easy connection to other devices.

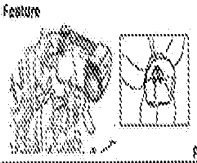


22X zoom is produced using 5X optical zoom together with 4X digital zoom.



page 56

Macro Feature



page 61

Landscape Mode



page 66

Portrait Mode



page 67

Night Scene



page 65

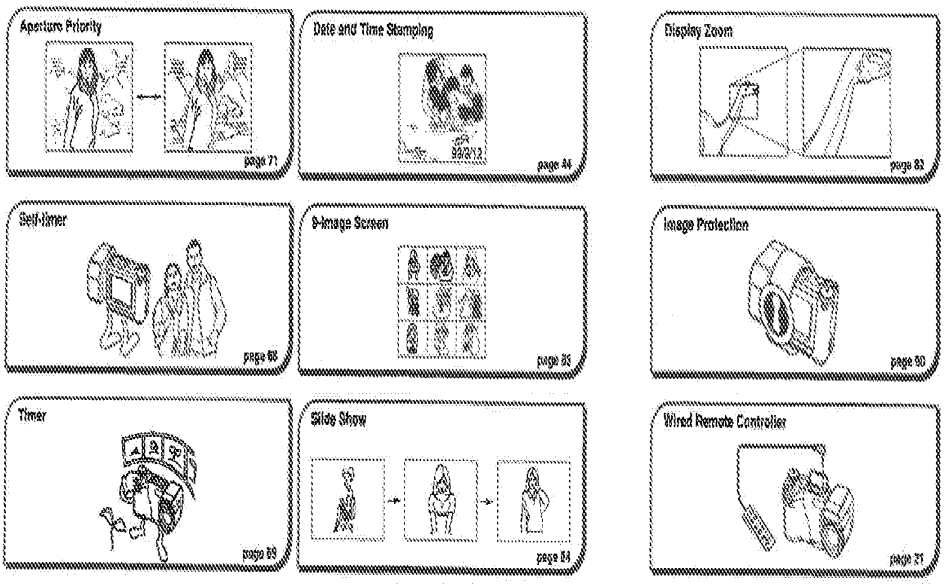
Shutter Speed Priority



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EXHIBIT A

PRECAUTIONS

General Precautions

Be sure to observe the following important precautions whenever using the QV-8000SX.

All references in this manual to "this camera" and "the camera" refer to the CASIO QV-8000SX Digital Camera.

- Never try to take pictures or use the built-in display while operating a motor vehicle or while walking. Doing so creates the danger of serious accident.
- Never try to open the case of the camera or attempt your own repairs. High-voltage internal components create the risk of electrical shock when exposed. Always leave maintenance and repair work up to authorized CASIO service providers.
- Never fire the flash in the direction of a person operating a motor vehicle. Doing so can interfere with the driver's vision and create the danger of accident.
- Never fire the flash while it is too close to the subject's eyes. Intense light from the flash can cause eye damage if it is fired too close to the eyes, especially with young children. When using the flash, the camera should be at least one meter from the eyes of the subject.
- Keep the camera away from water and other liquids, and never let it get wet. Moisture creates the danger of fire and electrical shock. Never use the camera outdoors in the rain or snow, at the seashore or beach, in the bathroom, etc.
- Should foreign matter or water ever get into the camera, immediately turn power off, unplug the AC adaptor from the power outlet, and contact your dealer or nearest CASIO service provider. Using the camera under these conditions creates the danger of fire and electrical shock.
- Should you ever notice smoke or a strange odor coming out of the camera, immediately turn power off and unplug the AC adaptor from the power outlet. Using the camera under these conditions creates the danger of fire and electrical shock. After making sure there is no more smoke coming from the camera, take it to your nearest CASIO service provider for repair. Never attempt your own maintenance.
- At least once a year, unplug the AC adaptor from the power outlet and clean the area around the prongs of the plug. Dust build up around the prongs can create the danger of fire.
- If the camera's case should ever become cracked due to dropping it or otherwise subjecting it to rough treatment, immediately turn power off, unplug the AC adaptor from the power outlet, and contact your nearest CASIO service provider.
- Never use the camera inside of an air craft or in any other areas where its use is prohibited. Doing so can result in an accident.
- Physical damage and malfunction of this camera can cause the image data stored in its memory to be deleted. Be sure to always keep backup copies of data by transferring them to personal computer memory.

- Never open the battery compartment cover, disconnect the AC adaptor from the camera or unplug it from the wall socket while recording images. Doing so will not only make storage of the current image impossible, it can also corrupt other image data already stored in camera memory.

Operating conditions

- This camera is designed for use in temperatures ranging from 0°C to 40°C.
- Do not use or keep the camera in the following areas.
  - In areas subject to direct sunlight
  - In areas subject to high humidity or dust
  - Near air conditioners, heaters, or other areas subject to temperature extremes
  - Inside of a closed vehicle, especially one parked in the sun
  - In areas subject to strong vibration

Condensation

- When you bring the camera indoors on a cold day or otherwise expose it to a sudden change of temperature, there is the possibility that condensation can form on the exterior or on interior components. Condensation can cause malfunction of the camera, so you should avoid exposing it to conditions that might cause condensation.
- To keep condensation from forming, place the camera into a plastic bag before moving it into a location that is much warmer or colder than your current location. Leave it in the plastic bag until the air inside the bag has a chance to reach the same temperature as the new location. If condensation does form, remove the batteries from the camera and leave the battery compartment cover open for a few hours.

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EXHIBIT A

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About the camera's backlight...

- The camera is equipped with a fluorescent light source to provide the back lighting for its LCD.
- The normal service life of the backlight is approximately six years, when the camera is used for about two hours a day.
- Should the LCD image appear abnormally dark, take the camera to your dealer or an authorized CASIO service provider to have the light source replaced. Note that you will be charged for this replacement.
- Under very cold conditions, the backlight may require more time than normal to light, or reddish bands may appear in the displayed image. These conditions do not indicate malfunction, and normal operation should return at higher temperatures.

Monitor Screen

Recording

- The image shown on the monitor screen during recording is intended for composition purposes only, so its quality does not match that of the image as it is recorded. The image is recorded in accordance with the quality setting made with the procedure under "Quality Settings" on page 53.
- A dimly lit subject can slow down monitor screen refresh or cause static in the displayed image.

Playback

This camera is designed for high-speed scrolling of images during playback. Because of this, the playback image that initially appears on the monitor screen does not show the full resolution of the image as recorded. When you stop at the image you want, the monitor screen refreshes and shows the image in its full resolution.

Lens

- Camera performance can be adversely affected by fingerprints or dirt on the lens surface. Never touch the lens surface with your fingers.
- Should the lens become dirty, use a blower to blow off dirt and dust, or a soft, dry cloth to wipe off the lens.

Date Setting

No date setting is made before the camera is shipped from the factory. Be sure to use the procedure on page 44 to set the time and date before using the camera for the first time. File name assignment and time stamping will not be performed correctly if the time and date are wrong.

GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THIS UNIT IN THE U.S.A. (not applicable to other areas).

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTICE

This equipment has been tested and found to comply with the limits for a Class B peripheral, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Properly shielded cables with ferrite core must be used for connection to host computer and/or peripherals in order to meet FCC emission limits.

Declaration of Conformity

Model Number:	QV-8000SX
Trade Name:	CASIO COMPUTER CO.,LTD.
Responsible party:	CASIO INC.
Address:	570 MT. PLEASANT AVENUE, DOVER,NEW JERSEY 07801
Telephone number:	973-361-5400

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CASIO COMPUTER CO.,LTD QV-8000SX

FC Tested To Comply With FCC Standards

FOR HOME OR OFFICE USE

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EXHIBIT A

UNPACKING

Check to make sure that all of the items shown below are included with your camera. If something is missing, contact your dealer as soon as possible.

Camera



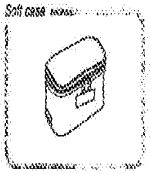
Wired Remote Controller



Lithium Battery for wired remote controller (CR2025)



Soft case



Lens cap
Attached to the lens.



2-Way Shoulder/ Wrist Strap



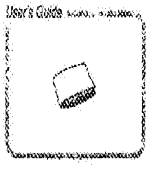
Video cable



Special USB cable



User's Guide



Using the Lens Cap

Be sure to affix the lens cap whenever you are not using the camera. When affixing the lens cap, position it as shown in the illustration and press at the points indicated by the arrows.



• A clip on the back of the lens cap lets you fasten it to the camera strap.

Attaching the Strap

The two-way strap that comes with the camera can be used either as a shoulder strap or a wrist strap. Pass the wrist strap through the hole on the side of the camera as shown in the illustration.



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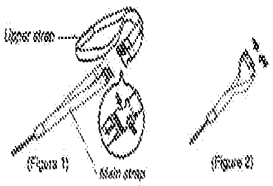
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EXHIBIT A

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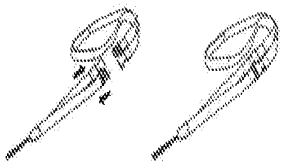
Using the Strap as a Wrist Strap

Detach the upper strap from the main strap (Figure 1), and then attach the two buckles of the main strap to each other (Figure 2).
Press the buckles together until they snap securely into place.



Using the Strap as a Shoulder Strap

Attach the strap to the camera so the shoulder pad is on the inside of the loop.

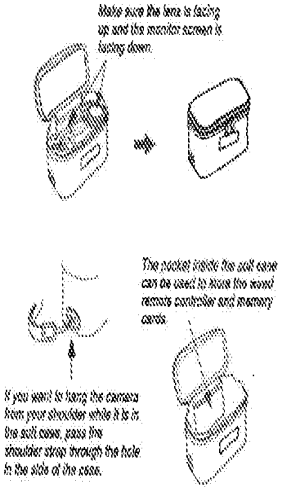


IMPORTANT!

- Be sure to keep the strap around your wrist whenever using the camera to protect against accidentally dropping it.
- The supplied strap is intended for use with this camera only. Do not use for any other application.
- Never swing the camera around by the strap.
- Allowing the camera to swing freely from your neck can result in damage to the camera due to its bumping against other objects. It also creates the danger of the camera becoming caught in a door or on other objects, resulting in personal injury.

Using the Soft Case

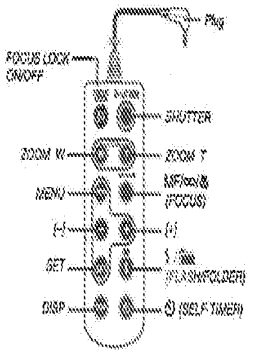
Keep the camera in its soft case to protect it when not in use.



Using the Wired Remote Controller

The wired remote controller that comes with the camera can be used to control the camera. When using a slow shutter speed or telephoto, you can avoid blurring of the image due to camera movement by mounting the camera on a tripod and using the wired remote controller to trigger the record operation. You can also use remote control for playback during presentations.

General Guide



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EXHIBIT A

Replacing the Wired Remote Controller Battery

The wired remote controller is powered by a single CR2025 lithium battery.

1. While pressing the battery holder lock, pull the battery holder from the wired remote controller.



2. After wiping off the two sides of a battery with a soft, dry cloth, place it into the battery holder with the positive (+) side facing up (so you can see it).



3. Slide the battery holder back into place.

Failure of the wired remote controller to operate probably means that the battery needs to be replaced.

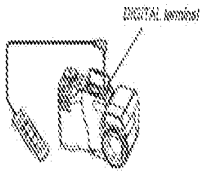
Battery Precautions

Caution

- Keep batteries out of the reach of small children. If swallowed accidentally, contact a physician immediately.
- Misuse of a battery can cause it to leak, which damages and corrodes the area around the battery and creates the danger of fire and personal injury. Be sure to observe the following precautions.
- When loading the battery, make sure its positive (+) and negative (–) sides are facing correctly.
- Use only the battery type that is specified for this unit.
- Never try to charge a battery or take it apart, and never allow its poles to become connected to each other by metal (shorted). Do not expose batteries to heat or dispose of them by burning.
- Dead batteries tend to leak battery fluid. Never leave a dead battery in the wired remote controller.

Connecting to the Camera

Turn off camera power and then attach the plug of the wired remote controller to the camera's DIGITAL terminal.



Wired Remote Controller Buttons

The buttons of the wired remote controller have the same basic functions as the buttons on the camera, except for the differences described below.

To perform this operation:	Do this:
Focus Lock	Wired remote controller: Press the FOCUS LOCK ON/OFF button to lock an focus lock, compose the image, and then press the SHUTTER button. • Pressing FOCUS LOCK ON/OFF again cancels focus lock. • Pressing the remote controller's SHUTTER performs the focus operation, followed by recording of the image. Camera: Press the shutter button half way, compose the image, and then press the shutter button (page 49).
Menu screen item selection	Wired remote controller: Highlight the item on the camera's monitor screen, and then press the SET button. Camera: Highlight the item on the camera's monitor screen, and then press the shutter button (page 33).

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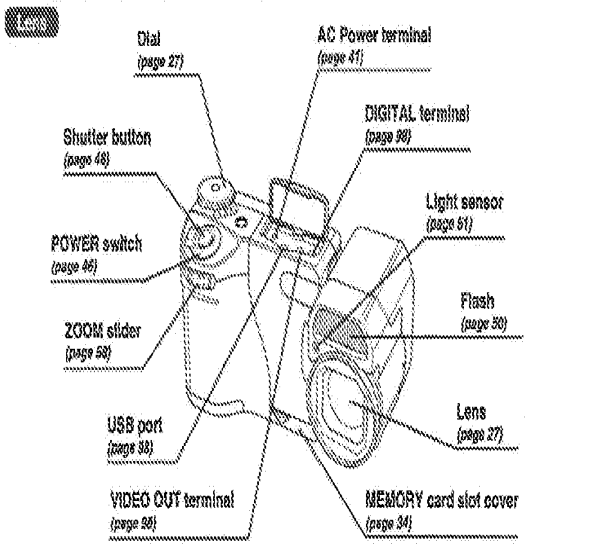
CASIO000130

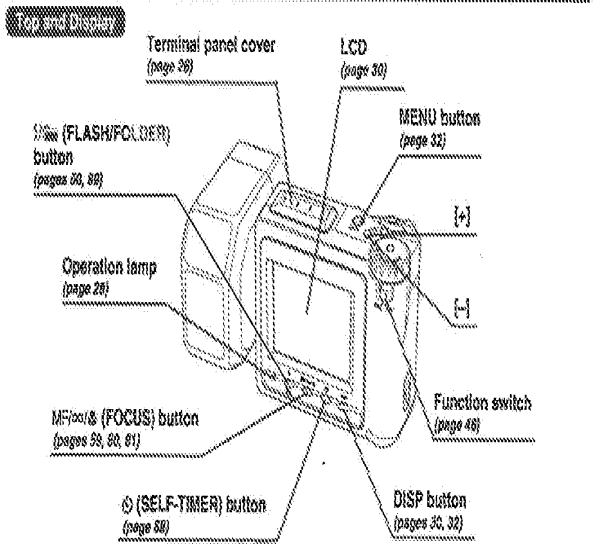
EXHIBIT A

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GENERAL GUIDE

The following illustrations show the names of each component, button and switch on the camera.

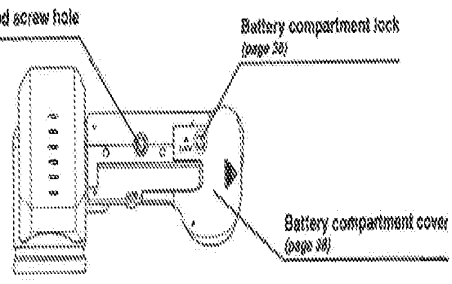




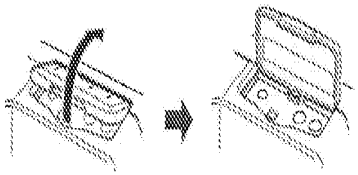
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EXHIBIT A

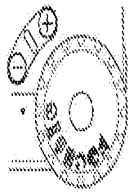
Bottom



Opening the Terminal Panel Cover



Top



Timer Mode	(page 59)
Panorama Mode	(page 64)
Movie Mode	(page 62)
Normal Mode	(page 46)
Night Scene Mode	(page 65)
Portrait Mode	(page 67)
Landscape Mode	(page 69)

Lens Filters

The area around the lens of the camera is threaded to allow use of commercially available lens filters with a diameter of 49mm. Simply screw the lens filter into place.

IMPORTANT!



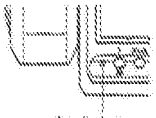
- Certain types of filters can cause the problems described below. Be sure to carefully check any filter for these problems before purchasing it.
  - The frame around the outside of some filters may block light from the lens, resulting in shadows in the image.
  - Some filters can interfere with proper operation of Auto Focus and the flash unit.
  - Filter performance may not be equivalent to that obtained with a film-based camera.
- Do not use multiple filters with this camera.
- Do not use a lens hood. Doing so causes incorrect firing of the flash unit.

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EXHIBIT A

Operation Lamp

The operation lamp shows the operational status of the camera.



Operation lamp

Record Mode

Lamp Color	On	Flashing
Green	Auto Focus operation completed	Preparing (after power on)
	Shooting stopped because of time to sleep start activation or data communication	Image store operation in progress
		Power off
		Low battery
Amber	Exposure warning	Flash is charging
Red	Correct focus	Memory error
	Memory full	
	Cannot charge the flash	

Playback Mode

Lamp Color	On	Flashing
Green	Shooting screen turned off due to data communication	Preparing (after power on)
		Delete operation in progress
		Storage operation in progress
		Power off routine in progress
		Low battery
Red	—	Memory error

Low Battery Warning

Lights (red), after which camera power turns off automatically.

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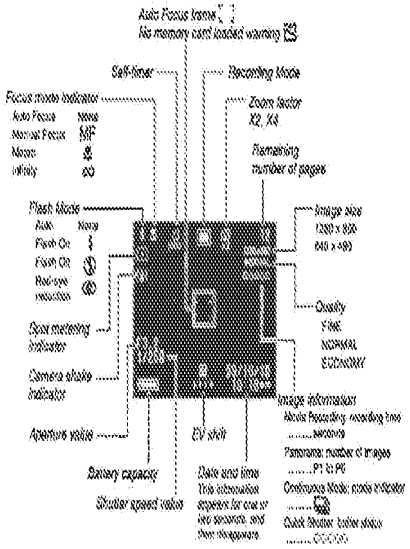
EXHIBIT A

MONITOR SCREEN

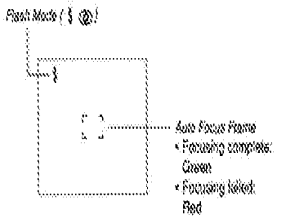
Pressing DISP causes various indicators to appear on the monitor screen.



Recording Mode



Screen when shutter is pressed half way

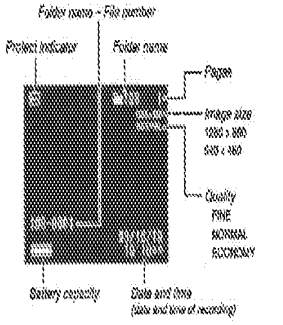


Flash indicator appears to indicate that flash will be fired (when auto flash is selected).

Recording Mode Indicators

	Timer		Night Scene
	Panorama		Portrait
	Movie		Landscape
	Normal		

Playback Mode



Changing the Display Language

Use the following procedure to switch the display language between English and Japanese.

1. Press MENU.
2. Select "Set Up" → "Language".
3. Select the display language you want.

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EXHIBIT A

Menu Screen

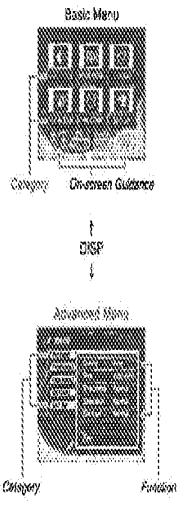
Pressing MENU displays the menu screen. The contents of the menu screen depend on whether you are in the PLAY Mode or REC Mode. While the menu screen is on the display, press DISP to toggle between the basic menu and the advanced menu.

In this User's Guide, the basic menu is always used for items that appear on both the basic menu and advanced menu.

The basic menu displays settings required for basic functions, while the advanced menu includes settings for all functions.

• See "Using the Record Menus" on page 75 and "Using the Playback Menus" on page 86 for more information about menu contents.

Sample Display: REC Mode



Making menu settings

1. Slide the Function Switch to PLAY or REC.
2. Press MENU.
3. Press DISP to toggle between the basic menu and the advanced menu.
4. Use [+] and [–] to select the category or function you want, and then press the shutter button.

   [+] [–] : Item selection
   Shutter button : Execution of a selection
   MENU : Returns to the previous screen or cancels settings.

   • Make settings in accordance with the guidance messages that appear on the monitor screen.

5. After making the settings you want, select "EXIT" and then press the shutter button.

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EXHIBIT A

MEMORY CARDS

This camera uses a memory card (CompactFlash cards) for image memory.
Use the procedure below to insert the memory card into the camera before you try to use it for the first time.

!!! IMPORTANT! !!!

- Make sure that the power of the camera is turned off before you insert or remove a memory card.
- When inserting a memory card into the camera, make sure that the correct side of the card is facing up, and that you insert the correct end of the card into the camera.

Inserting a Memory Card into the Camera

1. **Open the memory card slot cover.**



2. **As shown in the illustration, slide the memory card into the slot and push it in as far as it will go.**
   - If the Eject button is extended, press it in before sliding the memory card into the slot.



3. **Close the memory card slot cover.**

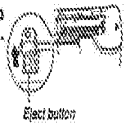


Removing a Memory Card from the Camera

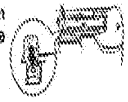
1. **Open the memory card slot cover.**



2. **Press the eject button so it extends from the camera.**



3. **Press the eject button once again to eject the card.**



4. **Remove the memory card.**



5. **Close the memory card slot cover.**



!!! IMPORTANT! !!!

- Insert only memory cards into the memory card slot. Inserting any other type of card can cause malfunction.
- Should water or any other foreign matter get into the memory card slot, immediately turn off power, unplug the AC adaptor, and contact your original retailer or nearest CASIO Service Provider.
- Never eject the CompactFlash card while the card slot is facing downwards. Doing so creates the danger of the CompactFlash card falling, which can corrupt image data on the card.

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EXHIBIT A

Formatting a Memory Card

You can format a memory card to delete all of the data stored on it.

***** IMPORTANT! *****

- Formatting a memory card deletes all images on the card, even if some or all of the images are protected (page 86).
- Data deleted by a memory card format operation cannot be recovered! Be sure to carefully check and confirm that you no longer need the data stored in a memory card before formatting it.

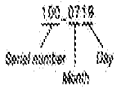
1. Press MENU.
2. Select "Set Up" → "Format".
3. In response to the confirmation message that appears, select "Yes" to start formatting the card.

Memory Card Precautions

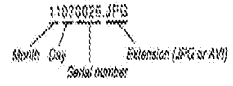
- Images cannot be recorded with this camera unless a memory card is installed in it.
- Be sure to use only CASIO brand CompactFlash cards. Proper operation with other memory cards is not guaranteed.
- Static electricity, electrical noise, and other electrical phenomena can cause corruption or even total loss of the data stored on a memory card. Because of this, you should always make backup copies of important images on other media (magnetic optical disk, floppy diskette, computer hard disk, etc.).
- Memory card problems can be corrected by reformatting the memory card (page 118). Reformatting a memory card deletes all images stored on the card, but you can use a computer to copy the images you want to keep to the computer's hard disk before reformatting your card. If you plan to be recording images where you do not have access to a computer, it is a good idea to take along an extra memory card or two just in case you experience an unexpected memory card problem.
- Formatting is recommended for any memory card that you suspect contains corrupted image data (due to a DE-CODE ERROR, strange image colors, malformed images) or newly purchased memory cards.
- Before starting a format operation, load a full set of new batteries (alkaline or lithium) into the camera or connect the AC adaptor to power the camera. Interruption of camera power during the format operation results in improper formatting, making it impossible to use the memory card.

Memory Card Folder Precautions

- The camera automatically creates folders (directories) on the memory card and assigns them names based on dates (month and day). Any image you record is automatically stored into the folder that corresponds to the date it is recorded.
- Up to 999 folders can be created on a single card. The following shows a typical folder name.



- Up to 255 image files can be stored in each folder. The following shows a typical file name.



- When you try to save the 251st image to a folder, the camera automatically creates a new folder and stores the image there.
- The above maximum number of files and folders are absolute maximums. The actual number of folders and files may be less due to memory card capacity and the size of each image.
- Panorama images are divided into multiple images and stored on the memory card.
- See "USING CompactFlash CARDS WITH YOUR COMPUTER" on page 101 for information about how files and folders are organized.

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EXHIBIT A

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