

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

ADVANCED CODING TECHNOLOGIES, LLC,
Patent Owner.

Case IPR2023-00910
Patent 9,445,041

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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EXHIBITS

- SAMSUNG-1001 U.S. Patent No. 9,445,041 (“the ’041 patent”)
- SAMSUNG-1002 Excerpts from the Prosecution History of the ’041 patent
- SAMSUNG-1003 Declaration of David Lett
- SAMSUNG-1004 U.S. Patent Publication No. 2010/0226622 to Morikawa (“Morikawa”)
- SAMSUNG-1005 Certified Translation of PCT Publication No. WO 2004/090703 to Takabe et al. (“Takabe”)
- SAMSUNG-1006 Walpole et al., A Player for Adaptive MPEG Video Stream-ing Over the Internet, Proceedings of the 26th AIPR Work-shop (October 15-17 1997) (“Walpole”)
- SAMSUNG-1007 U.S. Patent Publication No. 2012/0314967 to Suzuki (“Suzuki”)
- SAMSUNG-1008 U.S. Patent Publication No. 2011/0097059 to Sekiguchi (“Sekiguchi”)
- SAMSUNG-1009 Declaration of June Munford
- SAMSUNG-1010-1019 Reserved
- SAMSUNG-1020 Katherine K. Vidal, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (issued June 21, 2022)
- SAMSUNG-1021-1029 Reserved
- SAMSUNG-1030 Kalva Deposition Transcript
- SAMSUNG-1031 Reserved

- SAMSUNG-1032 Consumer Technology Association (CTA) Standard, A DTV Profile for Uncompressed High Speed Digital Interfaces, CTA-861-E, March 2008 (“CTA-861-E”)
- SAMSUNG-1033 Jack, “Video Demystified, A Handbook for the Digital Engineer,” Elsevier Inc. (2005) (“Jack”)
- SAMSUNG-1034 U.S. Patent Publication No. 2006/0055789 to Jin (“Jin”)
- SAMSUNG-1035 U.S. Patent No. 6,765,612 to Anderson et al. (“Anderson”)
- SAMSUNG-1036 U.S. Patent Publication No. 2008/0204431 to Chung et al. (“Chung”)
- SAMSUNG-1037 U.S. Patent Publication No. 2008/0059913 to Burtner et al. (“Burtner”)
- SAMSUNG-1038 U.S. Patent Publication No. 2008/0225154 to Pan et al. (“Pan”)
- SAMSUNG-1039 U.S. Patent Publication No. 2007/0217436 to Markley et al. (“Markley”)
- SAMSUNG-1040 U.S. Patent Publication No. 2009/0248794 to Helms et al. (“Helms”)
- SAMSUNG-1041 Second Declaration of David Lett

Arguments advanced by Patent Owner (“ACT”) lack merit.

**I. Claim Construction of “Specify[ing] [the] Output Frame Rate”
(claims 1, 4, 6)**

ACT’s construction of “specify[ing] [the] output frame rate” is the only construction of consequence because it is the only construction that ACT uses to attempt to distinguish the prior art. POR, 3. In its proposal, ACT asks your Honors to rewrite the term “specify[ing] [the] output frame rate” to read “specify[ing] [the] variable output frame rate.” But the disclosure in the ’041 Patent and the prosecution history do not rise to the high level of disclaimer, disavowal, or lexicography that would justify such a drastic change to the words chosen by the applicant during prosecution.

The meaning of “specify[ing] [the] output frame rate” is clear and requires no construction. The Board should reject ACT’s attempt to inject “variable” into the claim. Moreover, the Board will not find “variable output frame rate” in the patent either. It is telling that ACT’s construction acknowledges that “specifying” and “output frame rate” need no construction as those words are carried over into ACT’s proposal. With that concession, nothing remains to be construed.

Nor does the prosecution history support ACT’s injection of “variable” into the claims. In the argument ACT references, the applicant distinguished prior art which did not provide for the specifying of an output frame rate. Ex2006, ¶¶49-52. Rather, the prior art had a “fixed” frame rate, and thus the frame rate could not be

specified. SAMSUNG-1002, 71. Nowhere did the applicant discuss “variable” frame rates.

However, Iwata does not disclose an output frame rate specification unit configured to specify the playback frame rate of a first video data, and the playback frame rate of a second video data. Instead, the playback frame rate in Iwata is **fixed**. See, e.g., Iwata, paragraphs [0031] (“a playback frame rate is fixed at 60 fps”) and [0039] (“Since the playback frame rate is fixed (60 fps)”). In other words, while the playback frame rate of Iwata is a factor in the playback speed relationship discussed above, the **playback frame rate is fixed**, and only playback speed and decimation or interpolation are changed for a given shooting frame rate.

SAMSUNG-1002, 71. (Emphasis in original.)

For these reasons, the plain and ordinary meaning of the term should govern, absent any requirement that the output frame rate be variable.

II. Grounds 1A-1C and 2A-2D Render Obvious All Claims

A. Ground 1A

1. Morikawa Discloses “Specifying Output Frame Rate”

ACT’s argument is reliant on its construction that rewrites the term “output frame rate” to read “variable output frame rate.” Because that construction is incorrect, ACT’s argument fails.

To the extent the output frame rate must be variable, Morikawa renders obvious the use of variable output frame rates. Specifically, in Morikawa, “[t]he playback frame rate *is set based on* a display frame rate of a display device.” SAMSUNG-1004, [0025]. From this disclosure alone, a POSITA would have understood that Morikawa’s output frame rate is variable because there would be no reason to assess the display frame rate in setting the output frame if the output frame rate could not change. SAMSUNG-1041, [4]. Indeed, a POSITA would have understood that display devices had various display frame rates and that Morikawa assesses the display frame rate to ensure that its output frame rate is compatible. *Id.*, [4]-[7] (citing SAMSUNG-1008, SAMSUNG-1032, SAMSUNG-1033). If the output frame rate was always set to 60 Hz, Morikawa would have no reason to consult the frame rate of the display device when determining the playback frame rate. *Id.* In fact, the ’041 Patent describes setting an output frame rate based on the frame rate of the display device in a manner that is very similar to Morikawa. SAMSUNG-1001, 8:40-57; 12:30-55; claim 4.

In attempting to limit Morikawa to a frame rate of only 60 Hz, ACT takes an overly narrow view of Morikawa's disclosure in paragraph [0026] that, "when the display frame rate is 60 Hz, 120 Hz, 240 Hz, the p[l]ayback frame rate is set to 60 Hz." ACT reads this statement as limiting Morikawa to a frame rate that is *always* 60 Hz. But that is not what Morikawa says. Morikawa does not use the term "always" or otherwise state that the frame rate is limited to "60 Hz." Rather, Morikawa's disclosure merely provides one example where a 60 Hz output frame rate is used in circumstances where the frame rate of the display is 60, 120, or 240 Hz, and the assumption of Morikawa as understood by a POSITA is that each of these displays can handle 60 Hz. SAMSUNG-1030, 47:5-48:12. Morikawa would not use a frame rate that did not work. SAMSUNG-1041, [8].

Indeed, Morikawa's example does not preclude other examples. As Mr. Lett explains, frame rates other than 60, 120, or 240 Hz were known (e.g., the 300 Hz frame rate shown in Morikawa's FIG. 8) and a POSITA would have understood or found it obvious to use a frame rate different than 60 Hz when the display's frame rate is incompatible or sub-optimal with a 60 Hz frame rate. SAMSUNG-1041, [9] (citing SAMSUNG-1032, SAMSUNG-1033). During deposition, ACT's expert admitted that 120 and 240 Hz displays would not necessarily be able to play a 60-frame-per-second video, noting that "[i]t depends on the display hardware." SAMSUNG-1030, 43:18-46:2.

A POSITA would have understood (and found it obvious) to use a frame rate that is compatible with the display being used. It would make little sense to use an incompatible frame rate. In addition, as Mr. Lett explains, a POSITA also would have found it obvious that certain circumstances would have been benefitted from higher (or lower) output frame rates where a display supports multiple frame rates and would have found it obvious to consider frame rates that are different than 60 Hz. SAMSUNG-1041, [9]. Indeed, a POSITA would have found output frame rate to have been a matter of obvious design choice and would have considered the use of any of the display frame rates disclosed by Morikawa as potential options. *Id.*; *see also* SAMSUNG-1030, 51:9-18 (Dr. Kalva testifying that, if someone “knows how to build a system at 60 Hz output,” they would “know how to build a system ... to design it for a different frame rate”). For these reasons, a POSITA would not have viewed Morikawa’s disclosure as being limited to 60 Hz and, instead, would have broadly viewed Morikawa’s disclosure of setting the output frame rate based on the display frame rate as contemplating a variable output frame rate. SAMSUNG-1041, [9]-[10].

Further, ACT argues that Morikawa’s “playback frame rate is ‘predetermined’ ... by the frame rate of the display device with which Morikawa’s system is designed to function, it is not variable as required by the claims.” POR, 34. However, during deposition, Dr. Kalva confirmed that in the context of the ’041 Patent

the term “predetermined” simply means the “output frame rate that was set for those videos” and that “it doesn’t mean it’s like a fixed output frame.” SAMSUNG-1030, 22:3-23:6. Thus, ACT’s expert undermined its overly narrow interpretation of the term “predetermined.”

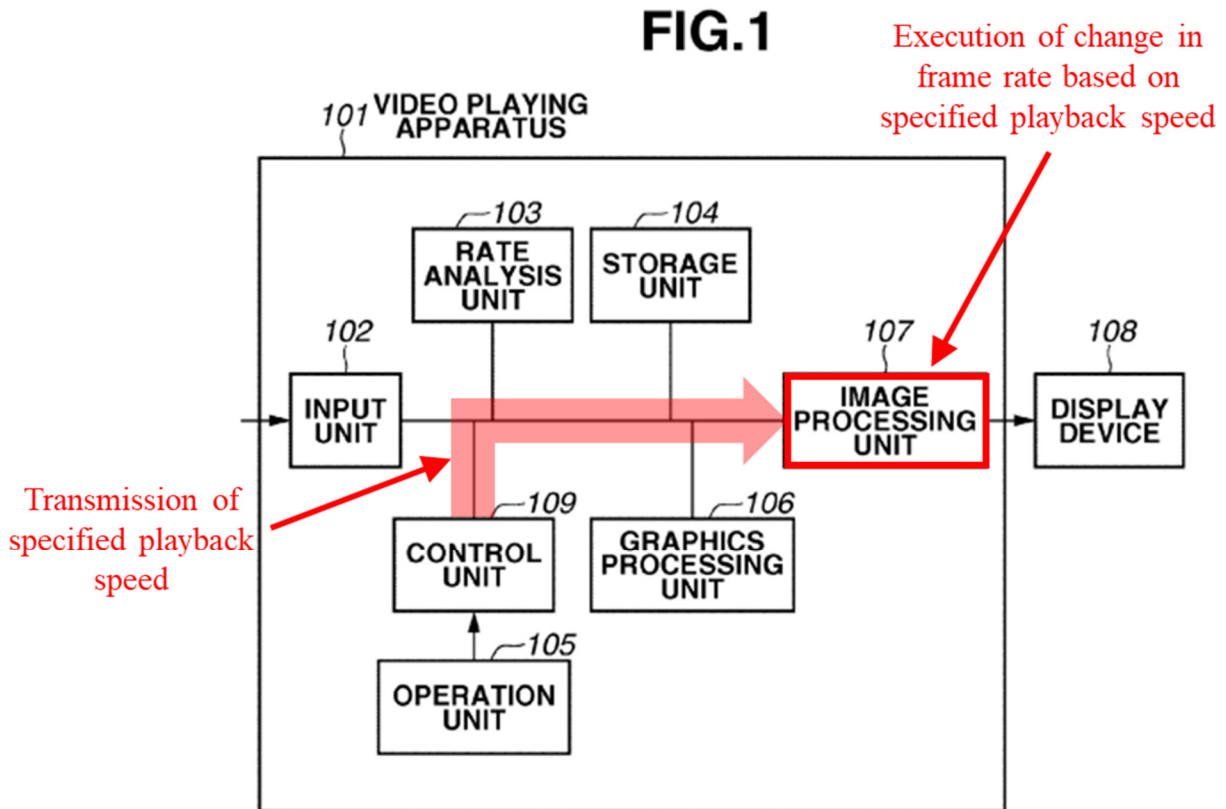
For these reasons, Morikawa renders obvious variable output frame rates.

2. Morikawa Discloses “Specifying a Same Playback Speed” Before Frame Rate Conversion

ACT does not dispute that Morikawa discloses specifying a same playback speed. Instead, ACT argues that Morikawa’s system specifies playback speed *after* frame rate conversion and, thus, its frame rate conversion is not performed based on the playback speed. ACT is incorrect.

As shown in FIG. 1, Morikawa’s system includes an operation unit 105, a control unit 109, and an image processing unit 107. Morikawa’s “operation unit 105 ... transmits instruction information *such as a content playback* to a control unit 109 in response to an operation of the user.” SAMSUNG-1004, [0033]. After receiving the user input, “[t]he control unit 109 *instructs* the image processing unit 107 *to execute* a frame decimating operation *in response to* instruction information from the operation unit 105. *Id.*, [0034]. Through this disclosure, Morikawa’s system receives user input specifying a playback speed, transmits the specified playback speed to the image processing unit 107, and changes the frame rate based on

the specified playback speed. SAMSUNG-1041, [11]-[12], [15]. Because the execution of Morikawa's frame decimating operation occurs in response to the instruction information from the user, Morikawa's frame rate conversion occurs *after* the user has specified the desired playback speed. *Id.*



SAMSUNG-1004, FIG. 1 (annotated).

Claim 3 also confirms that Morikawa's frame rate conversion occurs *after* and *based on* the specified playback speed:

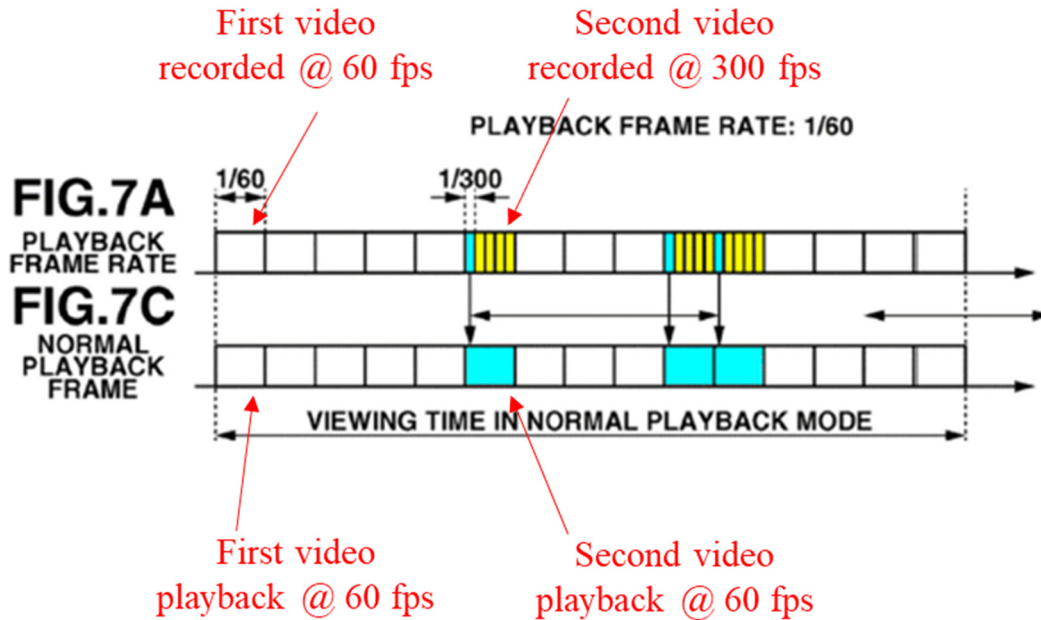
an operation unit for *designating one of the first playback time and the second playback time* by an operation of a user; and

a control unit for causing the image processing unit

to execute one of the non-frame decimating process, the first frame decimating process, and the second frame decimating process *based on a designated playback time*.

SAMSUNG-1004, claim 3.

And all of this is consistent with the process shown in FIG. 5, where “[i]n step S506, the user selects a playback mode for a scene of the high frame rate based on the displayed playback time in the respective playback modes” and, “[i]n steps S507 and S508, the high frame-rate portion is played back in a selected playback mode.” SAMSUNG-1004, [0046]; FIG. 5 (S507 or S508 “execute[s]” the selected playback mode). Indeed, in Morikawa, the playback speed is specified and then used to adjust the playback time by decimating frames, as evidenced by annotated FIGs. 7A and 7C below. SAMSUNG-1041, [13]-[15]. When asked during deposition “whether [Morikawa’s] frame conversion process, and specifically whether decimation occurs, follows the selection of playback speed,” Dr. Kalva confirmed, “Yes.” SAMSUNG-1030, 59:10-60:23.



SAMSUNG-1004, Detail of FIGs. 7A, 7C (annotated); [0030] (“played back *by applying the frame decimating process* to the video data”), Pet, 19.

ACT appears to confuse Morikawa’s calculation of playback time with Morikawa’s frame rate conversion. POR, 35-36 (citing only Morikawa’s paragraphs [0036]-[0038]). As Mr. Lett explains, Morikawa’s calculation of playback *time* is a prospective calculation of how long playback will take under different playback speeds when it occurs. SAMSUNG-1041, [16]. It is not the frame rate conversion. Rather, it is a calculation that Morikawa displays to aid a user in determining which playback speed to select. After the user uses these aids to select a playback speed, Morikawa’s system executes the frame rate conversion based on the selected playback speed using the techniques described above. *Id.*

For these reasons, Morikawa's system specifies a same playback speed before performing its frame rate conversion. *Id.*, [17].

3. Morikawa Discloses “Changing a Frame Rate of the First Moving Image Data” and “the Second Moving Image Data Based On ... the Output Frame Rate, and the Playback Speed”

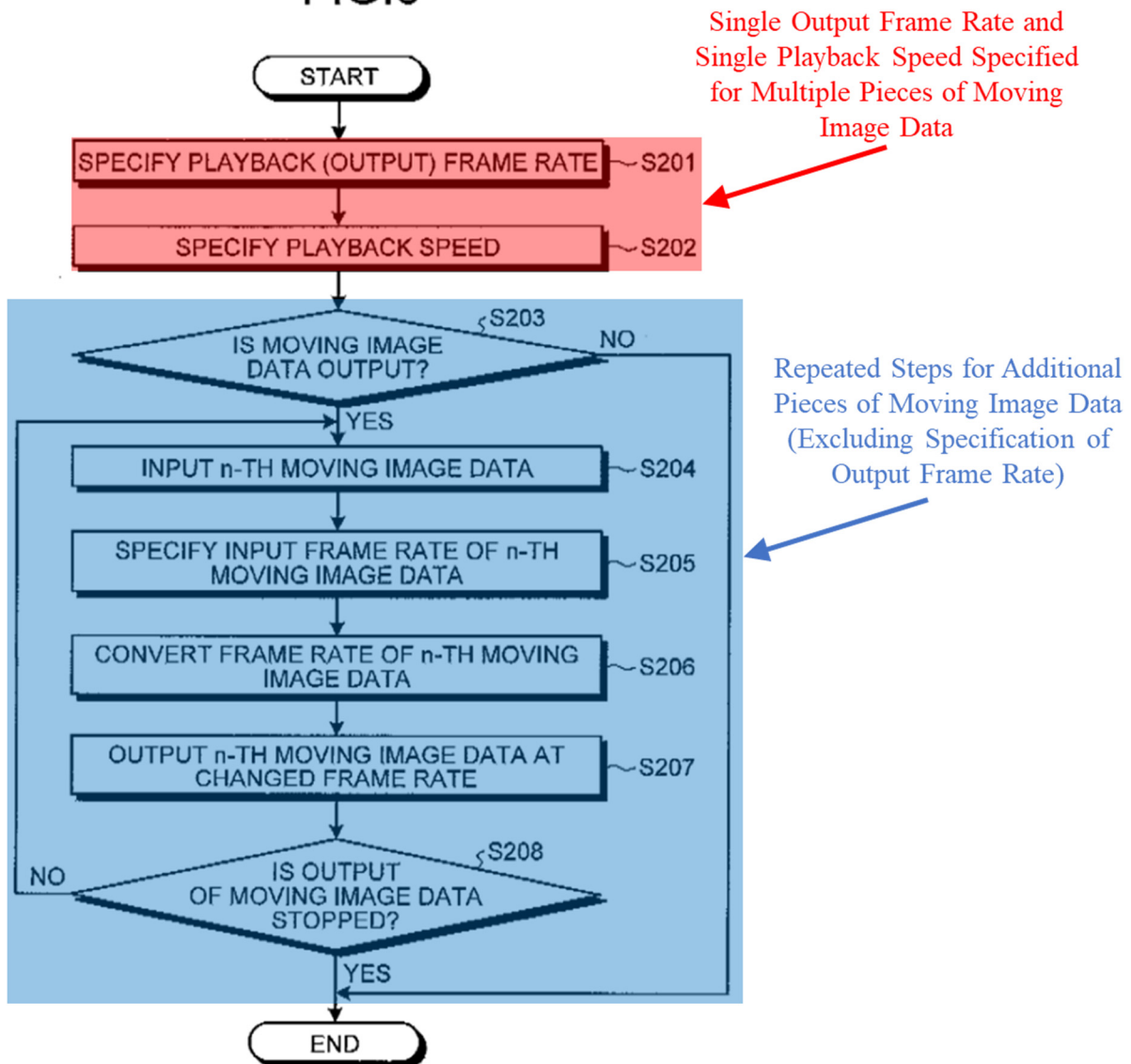
In Section IV.A.3, ACT largely repeats its flawed arguments that (1) specification of the playback speed in Morikawa is made after Morikawa's frame rate conversion, and (2) the claims require a variable output frame rate and Morikawa's output frame rate is always set to 60 Hz. For the reasons discussed above, these arguments fail.

Additionally, ACT asserts that the claims require “the converted frame rates of the first and second moving image data” to be “based on the specified output frame rates of *both* the first and second moving image data.” POR, 38 (emphasis in original). ACT posits that this is a problem for Morikawa because Morikawa sets the output frame rate based on the display frame rate and does not distinguish the output frame rate of the first moving image data from the output frame rate of the second moving image data. *Id.* Yet, the claims do not require multiple output frame rates and, instead, recite “changing a frame rate of the first moving image data based on ... *the output frame rate*” and “changing a frame rate of the second moving image data based on ... *the output frame rate*.” SAMSUNG-1041, [18]. In fact, repeated use of “*the output frame rate*” actually requires the same output

frame rate for both the first and second moving image data and, even if not required, the claims certainly permit it. SAMSUNG-1004, claims 1, 4-6.

The specification of the '041 Patent also is consistent in its disclosure of specifying the same output frame rate for the first and second moving image data. As discussed above, the '041 Patent describes setting an output frame rate based on the frame rate of the display device in a manner that is very similar to Morikawa. SAMSUNG-1001, 8:40-57; 12:30-55; claim 4. In its description of FIG. 6, the '041 Patent makes clear that a single output frame rate is set for multiple (i.e., N) moving image data. Specifically, the '041 Patent describes that, when second moving image data is input, the “frame rate conversion unit 306 converts the frame rate *based on the output frame rate specified in step S201*”—the same output frame rate that was used to convert the first moving image data and that was specified before the second moving image data was input. *Id.*, 14:39-15:10; FIG. 6 (below). Dr. Kalva confirmed the same during deposition. SAMSUNG-1030, 66:4-9 (confirming that “the selections don’t need to be made on a video-by-video basis”). Thus, ACT’s contention that distinct output frame rates are set for first and second moving image data does not accord with the language of the claims or the specification. SAMSUNG-1041, [19].

FIG.6



SAMSUNG-1001, FIG. 6 (annotated).

B. Ground 1B

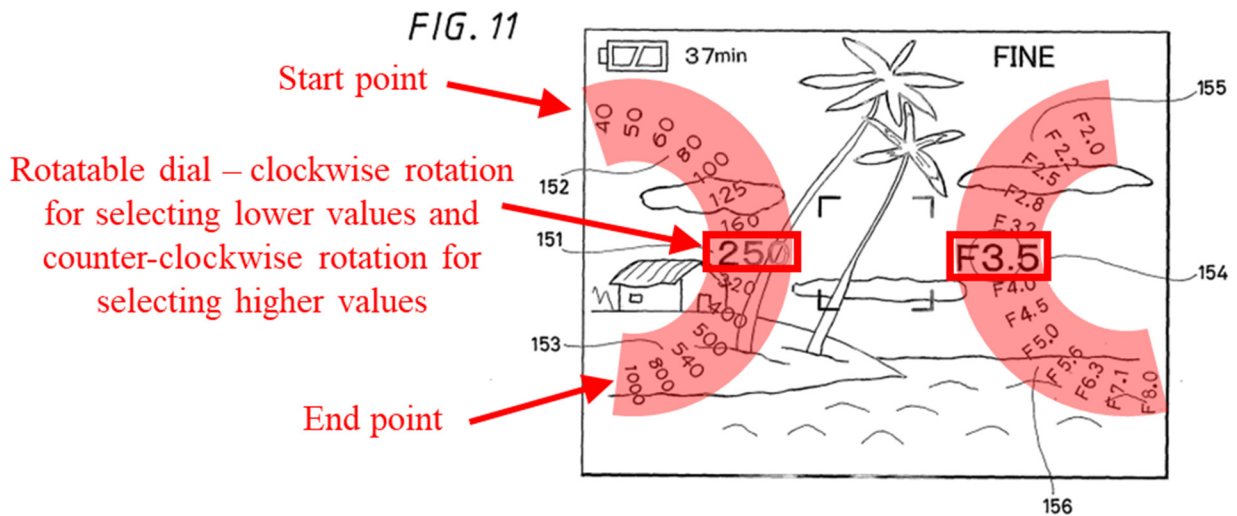
1. Takabe Discloses an Operating Unit that Accepts Inputs Continuously

ACT alleges that Takabe's interface does not accept input continuously. In its argument, ACT appears to take the position that "continuous" input requires input that allows a user to set any arbitrary value. But it's unclear how ACT thinks a user can set any arbitrary value using a circular ring shaped interface that displays the possible values available for selection. With this structure, the input is not arbitrary—it is limited to the possible values that are available for selection and that are arranged in the circular ring shape. If anything, the term "continuous" requires the circular ring shaped interface to merely enable selection of any of the possible values as the user rotates the circular ring. SAMSUNG-1041, [20].

And that is exactly what Takabe describes. Specifically, Takabe displays selected values at a designated position with other possible values such that "values other than the selected values can be easily understood" and it is "possible to easily get a hint on where the selected values are within the selectable range." SAMSUNG-1005, 6:8-23. Takabe also describes that its operational input can control "the setting of *any* of the values or items among the values or items that can be set at multiple levels," that "the adjustable items and *the adjustable values for each item*, can be *simultaneously* displayed," and that values "can be *freely* set by user operation." *Id.*, 10:3-16; 12:9-15. Through this disclosure, Takabe confirms that

its circular ring shaped interface enables selection of any of its possible values and, thus, performs continuous input. SAMSUNG-1041, [21].

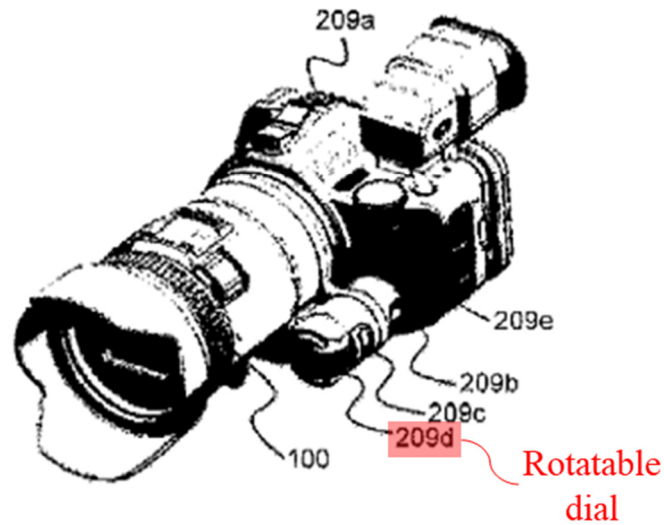
Further, as illustrated in FIG. 11, Takabe's interface supports continuous input selection in a manner similar to the interfaces in the '041 Patent by allowing a user to rotate and select among its possible values. Pet., 31-32.



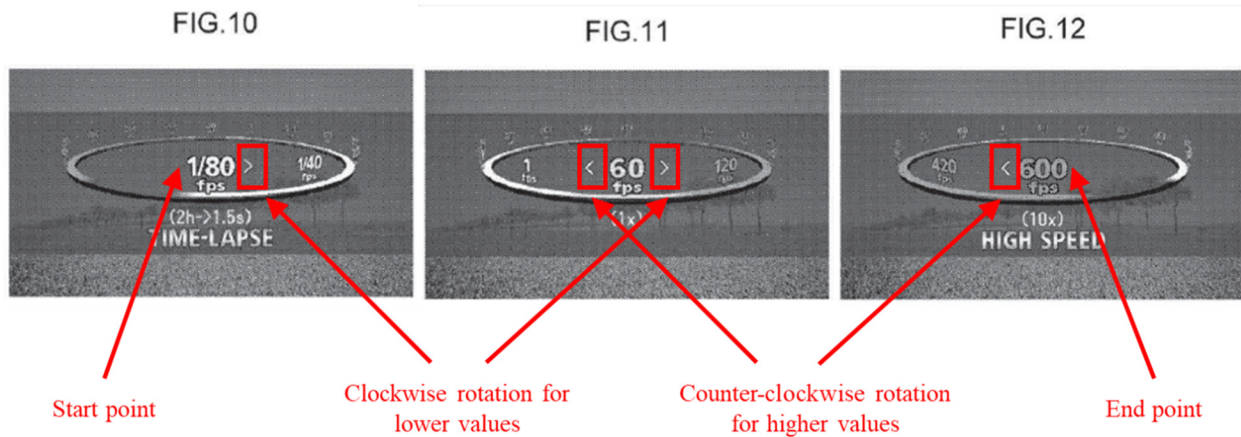
SAMSUNG-1005, FIG. 11 (annotated).

In fact, the '041 Patent describes a circular ring dial that can be rotated in a manner similar to Takabe. SAMSUNG-1001, 17:57-59; 18:1-28; POR, 39-41; SAMSUNG-1041, [22]-[23].

FIG.2A



SAMSUNG-1001, FIG. 2A (annotated).



SAMSUNG-1001, FIGs. 10-12 (annotated); 4:24-30; 17:24-19:29.

2. A POSITA Would Have Been Motivated to Combine Morikawa with Takabe

ACT argues that a POSITA would not have been motivated to combine Morikawa with Takabe because Takabe is directed to a camera and “choosing metrics used to capture content at the input stage,” not manipulating “input content by specifying input frame rates, output frame rates, or a shared playback speed.” POR, 41-42. In its argument, ACT takes an overly narrow view of Takabe’s disclosure.

Specifically, Takabe’s “invention relates to a display method and display device for displaying, set values, and the like.” SAMSUNG-1005, 4:4-7. Morikawa certainly relates to a display method and display device for displaying set values and, thus, a POSITA would have been motivated to achieve the benefits of Takabe’s “easy to understand” circular ring shape interface in Morikawa’s system. Pet., 29. The fact that Takabe describes a camera with camera settings as an “example” would not deter a POSITA, and does not negate the broader applicability of Takabe’s user interface teachings to other selectable parameters, such as those in Morikawa. SAMSUNG-1041, [24]-[25]. Indeed, Takabe itself recognizes that “it is also possible to apply this to processing where *other adjustable values* are selected in multiple levels” and “*other display formats* are available.” SAMSUNG-1005, 23:25-30. From this disclosure, a POSITA would have been motivated to consider use of Takabe’s circular ring shaped interface in other contexts and would

have been motivated to achieve the recognized benefits of Takabe in other systems that display input parameters, such as Morikawa. Pet., 29-30. Indeed, a POSITA would have seen use of Takabe's circular component in Morikawa's interface as use of a known technique to improve a similar device in the same way to achieve predictable results. SAMSUNG-1041, [25].

ACT's arguments about reasonable expectation of success are also misplaced. As discussed in the Petition, the proposed combination involves using "Takabe's circular ring shape interface component to display and enable a user to specify the moving image data parameters described in the apparatus of Morikawa." Pet., 29. As Mr. Lett explains, use of Takabe's circular component in Morikawa would have only required routine programming skills within the capabilities of a POSITA. SAMSUNG-1041, [26]. Indeed, by the December 12, 2012 priority date of the '041 Patent, the art of user interface design was well-developed and a POSITA would have been able to readily apply the user interface benefits described by Takabe in Morikawa's interface. *Id.* (citing SAMSUNG-1034, SAMSUNG-1037, and SAMSUNG-1038.)

ACT also argues against a strawman, contending that "Takabe's video camera cannot reasonably be expected to successfully operate when combined with Morikawa." POR, 43. But that is not the combination. Nowhere did the Petition argue that "Takabe's video camera" would be combined with Morikawa. It is

Takabe's circular ring shape interface component that the Petition proposes adding to Morikawa. Contrary to ACT's contention, the fact that Takabe implements its interface in a video camera supports reasonable expectation of success because a POSITA would have viewed Morikawa's video playing apparatus as a more robust device with more processing capabilities than Takabe's video camera. SAM-SUNG-1041, [27]. With a more robust device with more processing capabilities, the expectation of success is even higher. *Id.*

3. The Printed Matter Doctrine Supports the Lack of Patentability of Claim 3

ACT's contention that the printed matter doctrine is not within the scope of an IPR proceeding is incorrect. As the Federal Circuit has held, where the only difference between a prior art product and a claimed product is printed matter that is not functionally related to the product, the content of the printed matter will not distinguish the claimed product from the prior art. *In re Ngai*, 367 F.3d 1336, 1339, (Fed. Cir. 2004). Whether a claimed product distinguishes prior art is certainly within the scope of an IPR proceeding.

ACT's only alleged distinctions over Takabe relate to content of the interface, not functionality. Specifically, ACT's arguments related to whether Takabe's interface includes continuous or stepwise values and whether it includes frame rates or playback speeds are squarely directed to the content (i.e., printed matter) of the interface, rather than its functionality. For these reasons, the printed matter

doctrine confirms that claim 3 is not patentable over Takabe and supports the combination of Morikawa and Takabe, as the only distinctions that ACT draws relate to non-functional printed content of the interface.

C. Ground 1C

1. A POSITA Would Have Been Motivated to Combine Morikawa with Walpole

ACT does not dispute that Walpole describes the features in claim 5 and, instead, attacks the combination of Morikawa and Walpole. In attacking motivation to combine, ACT's only argument is that a POSITA would not have been motivated to combine Morikawa and Walpole because, according to ACT, Morikawa is only network-enabled at its input, not its output. ACT's argument is premised on an overly narrow view of the combination and does not account for the general knowledge and skill of a POSITA. SAMSUNG-1041, [28].

Although Morikawa explicitly describes network transmission at its input source, this disclosure does not preclude the system from outputting data over a network and a POSITA would not have viewed Morikawa so narrowly. Pet., 32-33; SAMSUNG-1004, [0023]. As Mr. Lett explains, a POSITA would have recognized that network connectivity is generally bidirectional and utilized for both input and output. SAMSUNG-1041, [29]. Indeed, the widespread adoption of network-enabled video processing systems prior to the '041 Patent would have made

it obvious to implement network output capabilities in Morikawa's system. Pet., 33-34; SAMSUNG-1041, [29] (citing SAMSUNG-1039, SAMSUNG-1040.)

In this regard, Walpole itself describes "an adaptive Internet-based video and audio player" that goes "beyond a simple network TV." SAMSUNG-1006, 270-271. ACT ignores this disclosure by focusing on Morikawa alone. In the proposed combination, the Petition explained how it would have been obvious to apply "Walpole's teachings to augment Morikawa," which would have included augmenting Morikawa to have "an adaptive Internet-based video and audio player" that is connected to the image processing apparatus over a network. As Mr. Lett explains, from Walpole's disclosure, a POSITA would have found it obvious to use a network-based video player in Morikawa's system and adapt the output frame rate processing based on available bandwidth to the network-based video player. SAMSUNG-1041, [30]. Indeed, as discussed in the Petition, Walpole describes several benefits of its approach that would have motivated a POSITA to use it. Pet., 33-34. A POSITA also would have viewed Walpole's use of a network-enabled video player as an output source for Morikawa's system to have entailed use of a known solution to improve a similar system in the same way. *Id.*

For these reasons, Walpole's teachings on adaptive video applications, particularly in response to fluctuating network conditions, would have provided a compelling motivation for a POSITA to combine it with Morikawa. SAMSUNG-

1041, [31]. Particularly, Walpole’s adaptive scheme proposes adjusting frame rates dynamically to optimize video quality under varying bandwidth availability. Pet., 33; SAMSUNG-1006, 276-279, 270.

D. Ground 2A

1. Suzuki Discloses “Specifying Output Frame Rate”

Like in Ground 1A, ACT’s argument is reliant on its incorrect construction. Also, as discussed in the Petition, Suzuki explicitly states that “moving images may be reproduced *at other frame rates*” beyond 60 fps. Pet., 39-40; SAMSUNG-1007, [0096]-[0098]. Suzuki even expresses its frame rate as a variable—fRa. *Id.* From this description, a POSITA would have recognized and found obvious that Suzuki’s system is capable of specifying and utilizing variable output frame rates. SAMSUNG-1041, [32]. As discussed above for Morikawa, a POSITA would have found output frame rate to have been a matter of obvious design choice and would have considered the use of known output frame rates as the “other” frame rates Suzuki contemplates for its variable fRa. *Id.* For these reasons, a POSITA would have broadly viewed Suzuki’s disclosure of setting other frame rates with variable fRa as contemplating a variable output frame rate. *See also*, Supra §II.A.

2. Suzuki Discloses “Changing a Frame Rate of the First Moving Image Data” and “the Second Moving Image Data Based On ... the Output Frame Rate, and the Playback Speed”

ACT asserts that Suzuki does not specify two output frame rates corresponding to the first and second moving image data. As discussed above (*supra* II.A.3), neither the claims, nor the specification of the '041 Patent require specification of two output frame rates.

E. Ground 2B

1. Takabe Discloses an Operating Unit that Accepts Inputs Continuously

See supra, II.B.1. As discussed above at II.B.1, Takabe discloses an operating unit that accepts the inputs continuously.

2. A POSITA Would Have Been Motivated to Combine Suzuki with Takabe

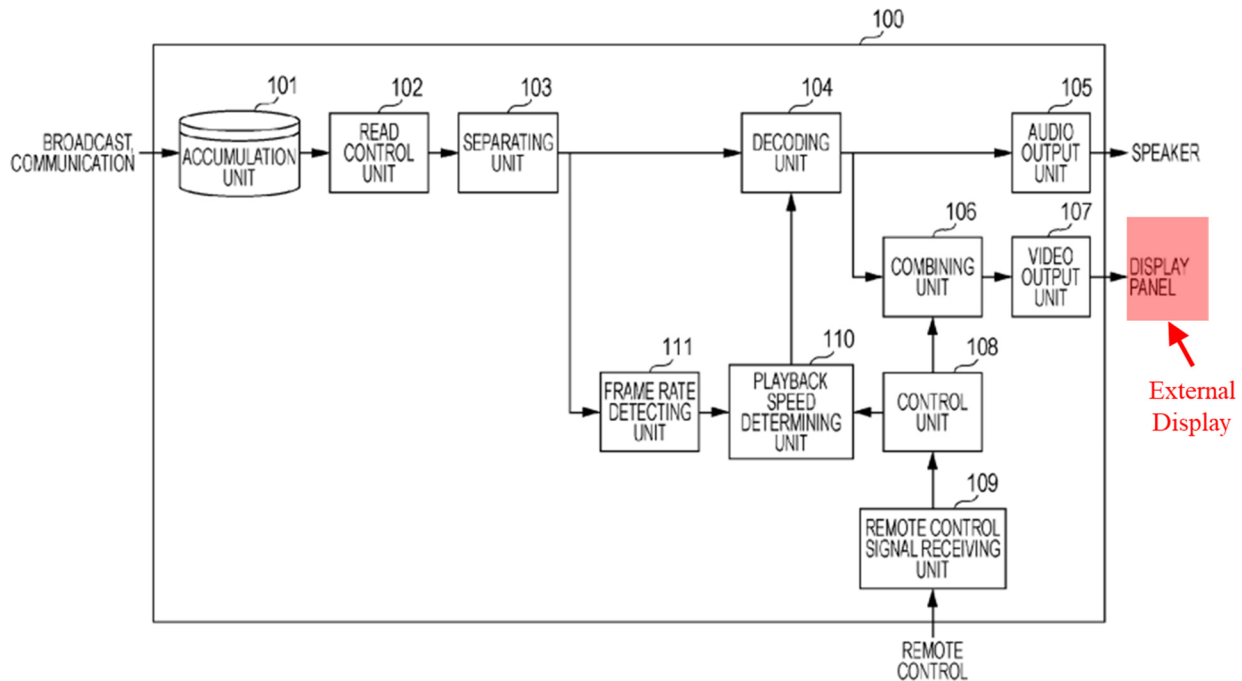
See supra, II.B.2. ACT's arguments against the combination of Suzuki and Takabe mirror its arguments against the combination of Morikawa and Takabe. For similar reasons, ACT's arguments are unfounded and a POSITA would have been motivated to combine Suzuki and Takabe to gain the benefits of Takabe's known interface component, as discussed in the Petition. Pet., 47-49; SAMSUNG-1041, [33].

F. Ground 2C

1. Sekiguchi Discloses “Specify[ing] the Output Frame Rate Based On Information of an External Device Receiving the Moving Image Data”

ACT contends that “Sekiguchi’s display panel of the device is *the imaging apparatus receiving the moving image data* instead of the claimed external device.” POR, 55-56. Not so. As shown in Sekiguchi’s FIG. 1 (below), Sekiguchi’s video playback apparatus 100 receives the moving image data and outputs it to a display panel. SAMSUNG-1008, [0029]-[0031].

FIG. 1



SAMSUNG-1008, FIG. 1 (annotated.)

Sekiguchi’s display panel is clearly external to its video playback apparatus 100 and receives the video data output therefrom. SAMSUNG-1008, [0029]-

[0031]. Sekiguchi's display panel also has a refresh rate that is used to specify the output frame rate of the video playback apparatus 100. *Id.*, [0031]. The display panel is "external" to the video processing apparatus and provides "information" (its refresh rate) used to specify the output frame rate. Pet., 52; SAMSUNG-1008, [0031]; [0008]; SAMSUNG-1041, [34]-[35].

Further, ACT does not support its contention that the term "display panel" is limited to being part of the imaging apparatus. As Mr. Lett explains, a POSITA would have understood that there was a broad understanding in the field that display panels can be external components, particularly given Sekiguchi's depiction of the same. SAMSUNG-1041, [36]. Thus, a POSITA would not have viewed Sekiguchi's display panel as limited to an internal display panel and, instead, would have considered an external display panel because external display panels were well-known in the art. SAMSUNG-1035, 3:39-45; SAMSUNG-1036, [0023], FIG. 1A.

Finally, ACT's arguments about Sekiguchi lacking disclosure of specifying two output frame rates for two different input video streams are irrelevant, as claim 4 does not require this. The claim only requires specifying a single output frame rate based on the external device information. *See supra* II.A.3.

2. A POSITA Would Have Been Motivated to Combine Suzuki with Sekiguchi

ACT argues that a POSITA would not have been motivated to combine Suzuki and Sekiguchi due to their different technological fields—Suzuki being a video camera system and Sekiguchi a video playback system. POR, 56-58. However, both Suzuki and Sekiguchi address the issue of frame rate synchronization, a common problem in digital video technology. Pet., 50-51; SAMSUNG-1007, [0024]-[0025]; SAMSUNG-1008, [0008]-[0013], [0031]. Therefore, a POSITA would have recognized the benefit of combining these teachings to improve video playback quality. SAMSUNG-1041, [37].

ACT also contends that Suzuki's fixed frame rate and lack of network capability make it incompatible with Sekiguchi's teachings. This argument overlooks the fact that the core issue addressed by both patents is the synchronization of frame rates to enhance video playback. The modification proposed by the Petition does not require network capability, but rather the application of Sekiguchi's method of adjusting frame rates based on the display device's capabilities. This is a straightforward adaptation that a POSITA would have found routine and within their skill set. SAMSUNG-1041, [38].

Further, ACT asserts that the Petition lacks a detailed explanation of how the combination would be implemented, including how the modified system would detect the frame rate required by the display device and impact playback speed.

When combining known elements, the specific implementation details are often within the routine capabilities of a POSITA and a POSITA would have simply used Sekiguchi's techniques of using the refresh rate of the display panel to specify the output frame rate. SAMSUNG-1041, [39]. Indeed, by synchronizing the output frame rate with the frame rate of the display panel, Sekiguchi's synchronization avoids anomalies that might occur when the output frame rate and the display frame rate are misaligned. As Mr. Lett explains, the teachings of Sekiguchi provide sufficient guidance on frame rate control, which a POSITA would have applied to Suzuki's system using routine programming skills without undue experimentation. *Id.* The predictable benefits of avoiding playback anomalies by synchronizing frame rates, as taught by Sekiguchi, provide a clear motivation for a POSITA to apply these teachings to Suzuki's system. *Id.*

G. Ground 2D

1. A POSITA Would Have Been Motivated to Combine Suzuki with Walpole

As discussed above, a POSITA would have been motivated to combine Morikawa with Walpole. *See supra* II.C.1. For similar reasons, a POSITA would have been motivated to combine Suzuki with Walpole to achieve the benefits of Walpole's adaptive Internet-based video and audio player with adaptive streaming capabilities based on network bandwidth. SAMSUNG-1041, [40].

ACT's argument that Suzuki lacks network connectivity and thus would not have motivated a POSITA to look to Walpole is flawed. The fact that Suzuki does not explicitly mention Internet connectivity does not preclude the obviousness of using network connected devices in Suzuki and adapting its frame rate based on network conditions, as taught by Walpole. That is the point of the combination and a POSITA would have seen benefits of extending Suzuki to communicate with network displays. SAMSUNG-1041, [41]-[42].

Finally, ACT's argument that Walpole's frame rate can only be reduced and not increased is irrelevant to the claim limitations. POR, 59. Claim 5 merely requires specifying the output frame rate based on network band information, which Walpole clearly teaches. Pet., 55. It does not state that you must be able to reduce and increase frame rate. For these reasons, and those discussed above at II.C.1, a POSITA would have found it obvious to combine Suzuki and Walpole. SAMSUNG-1041, [43].

III. ACT's Means-Plus-Function Claim Constructions are Irrelevant

ACT's proposed means-plus-function constructions are not relevant to any dispute in this proceeding because ACT does not allege that the prior art fails to disclose the structure in its constructions beyond its arguments over the claim language itself. Indeed, ACT's arguments against claim 1 align exactly with its argu-

ments against method claim 6, which does not receive means-plus-function treatment. As a consequence, ACT's means-plus-function constructions are irrelevant to this proceeding and judicial efficiency counsels against resolving them. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *DJI Europe B.V., v. Daedalus Blue LLC*, IPR2020-01474, Paper 32, 11 (PTAB 2022)(“We need not address the construction of any of the means plus function claim terms because it is not necessary to our Decision. *See Nidec Motor Corp.* 868 F.3d at 1017.”)¹

Further, ACT's argument that the Petition fails to satisfy its claim construction obligations is incorrect. The Petition relied on the well-known presumption that terms that do not use the term “means” do not receive means-plus-function treatment and, thus, did not advance means-plus-function constructions of the unit limitations of claim 1. By relying on the presumption, the Petition took its position on claim construction and it was incumbent on ACT to bring evidence that the pre-

¹ ACT itself does not advance constructions for “moving image data input unit” or “moving image data output unit,” thereby confirming that resolution of terms that allegedly invoke §112(6) do not require construction.

sumption should be overcome. Yet, ACT's response merely brings cursory evidence that the claims lack structure and largely bases its argument on the constructions proposed in the co-pending litigation. This is insufficient, and Petitioner continues to submit that the presumption should apply for the purposes of this proceeding. *Google LLC, v. Valtrus Innovations LTD*, IPR2022-01418, Paper 41, 19 (PTAB 2024)(“Contrary to Patent Owner’s argument, 37 C.F.R. § 104(b) does not require a Petitioner to show ‘how the claims are invalid under its own proposed construction in the district court.’”)

To the extent the Board finds that ACT has overcome the presumption and that it is necessary to resolve means-plus-function constructions for these terms, Petitioner accepts ACT's identification of function and structure for the purpose of this proceeding only, but for (1) ACT's reading in of “variable” to output frame rate (*see supra* I), (2) ACT's requirement of multiple output frame rates (*see supra* II.A.3), and (3) ACT's introduction of parameter transmission/reception limitations that find no support in FIG. 6 or the specification. Under these constructions, the prior art clearly renders obvious the identified function and structure based on the prior art disclosure cited and discussed in the Petition. Indeed, ACT does not argue claim 1 separately from claim 6 and does not assert that the identified structure for any limitation of claim 1 is specifically missing from the prior art in a manner

that is different from the language set forth in the claim. That language was thoroughly addressed in the petition. Pet., 9-24, 27-28, 37-47. Also, Morikawa and Suzuki each describe a software algorithm that performs the steps of receiving input moving image data and specifying input frame rate (“input frame rate specification unit”), specifying an output frame rate for first and second moving image data (“output frame rate specification unit”), specifying a same playback speed for the first moving image data and the second moving image data (“playback speed specification unit”), and converting input frame rate to a frame rate that is output, for each of the first moving image data and second moving image data, based on the specified input frame rates, specified output frame rate, and specified playback speed (“frame rate conversion unit”). *Id.*

IV. CONCLUSION

The Board should cancel all Challenged Claims.

Respectfully submitted,

Dated July 2, 2024

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CERTIFICATION UNDER 37 CFR §42.24

Under the provisions of 37 CFR §42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response totals 5,584 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1).

Dated July 2, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on July 2 2024, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response and accompanying exhibits were provided by email to the Patent Owner by serving the email correspondence addresses of record as follows:

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