

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VALEO NORTH AMERICA, INC., VALEO S.A., VALEO GMBH,
VALEO SCHALTER UND SENSOREN GMBH, and CONNAUGHT
ELECTRONICS LTD.,
Petitioner,

v.

MAGNA ELECTRONICS, INC.,
Patent Owner.

Case IPR2014-00220
Patent 7,859,565 B2

Before JAMESON LEE, PHILLIP J. KAUFFMAN, and
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

CLEMENTS, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Valeo North America, Inc., Valeo S.A., Valeo GmbH, Valeo Schalter und Sensoren GmbH, and Connaught Electronics Ltd. (collectively, “Petitioner”) filed a Corrected Petition requesting *inter partes* review of claims 1–49 of U.S. Patent No. 7,859,565 B2 (Ex. 1001, “the ’565 patent”). Paper 7 (“Pet.”). Magna Electronics, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 17 (“Prelim. Resp.”). On May 29, 2014, we instituted an *inter partes* review of claims 1–5, 7–13, 15–20, 25–32, 39–42, 47, and 48 (“the instituted claims”) on certain grounds of unpatentability alleged in the Petition. Paper 18 (“Dec. to Inst.”).

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 25, “PO Resp.”) to which Petitioner filed a Reply (Paper 30, “Pet. Reply”). Patent Owner filed a Motion to Exclude (Paper 55), which Petitioner opposed (Paper 57). Patent Owner filed a Reply to Petitioner’s Opposition to its Motion to Exclude. Paper 58.

Oral hearing was held on January 15, 2015.¹

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has shown, by a preponderance of the evidence, that claims 1–5, 8–13, 15–20, 25–32, 39–42, 47, and 48 of the ’565 patent are unpatentable. Petitioner has not shown, by a preponderance of the evidence, that claim 7 of the ’565 patent is unpatentable. Patent Owner’s Motion to Exclude is denied.

¹ A transcript of the oral hearing is included in the record as Paper 54 (“Tr.”).

A. Related Proceedings

Petitioner and Patent Owner indicate that the '565 patent is involved in *Magna Elecs., Inc. v. Valeo, Inc.*, No. 2:13-cv-11376 (E.D. Mich.), filed March 28, 2013. Pet. 4; Paper 9, 2. Petitioner also has filed five petitions for *inter partes* review of other related patents of Patent Owner: IPR2014-00221 (U.S. Patent No. 7,991,522 B2), IPR2014-00222 (U.S. Patent No. 8,386,114 B2), IPR2014-00223 (U.S. Patent No. 8,386,114 B2), IPR2014-00227 (U.S. Patent No. 7,877,175 B2), and IPR2014-00228 (U.S. Patent No. 7,877,175 B2).

The '565 patent is also the subject of IPR2014-01203. Paper 32, 1.

B. The '565 Patent

The '565 patent relates generally to vision systems for vehicles and, more particularly, to rearview vision systems that provide the vehicle operator with scenic information in the direction rearward of the vehicle. Ex. 1001, 1:18–21. According to the '565 patent, a long-felt need in the art of vehicle rearview vision systems had been to eliminate exterior rearview mirrors by utilizing image capture devices, such as cameras, in combination with dashboard displays (*id.* at 1:24–27), but prior art camera-based rearview vision systems for vehicles had not obtained commercial acceptance in part because such systems present a large amount of visual information in a manner that is difficult to comprehend (*id.* at 1:41–45). According to the '565 patent, in order to reduce blind spots significantly, multiple image capture devices are positioned at various locations on the vehicle. *Id.* at 1:45–48. As a result, the image of an object behind the equipped vehicle may be captured by more than one image capture device and displayed in multiple images. *Id.* at 1:48–50. This may confuse the

driver as to whether more than one object is present. *Id.* at 1:50–51. Also, when multiple image capture devices are positioned at different longitudinal locations on the vehicle, objects behind the vehicle are at different distances from the image capture devices, and therefore the same object may have a different size in each image. *Id.* at 1:51–56. Another difficulty can arise from the use of a wide-angle lens, which increases the field of view, but introduces distortion of the scene and further impairs the driver’s ability to judge distances of objects displayed. *Id.* at 2:6–19.

To address these issues, the ’565 patent discloses a rearview vision system having at least two image capture devices positioned on the vehicle and directed rearwardly with respect to the direction of travel of the vehicle. *Id.* at 2:27–31. The system includes a display, which combines the captured images into an image that would be achieved by a single rearward-looking camera having a view unobstructed by the vehicle. *Id.* at 2:31–35. Specifically, the ’565 patent discloses techniques for synthesizing images captured by individual, spatially separated, image capture devices into an ideal image displayed on the display device. *Id.* at 2:43–46.

Figure 3 of the '565 patent is reproduced below.

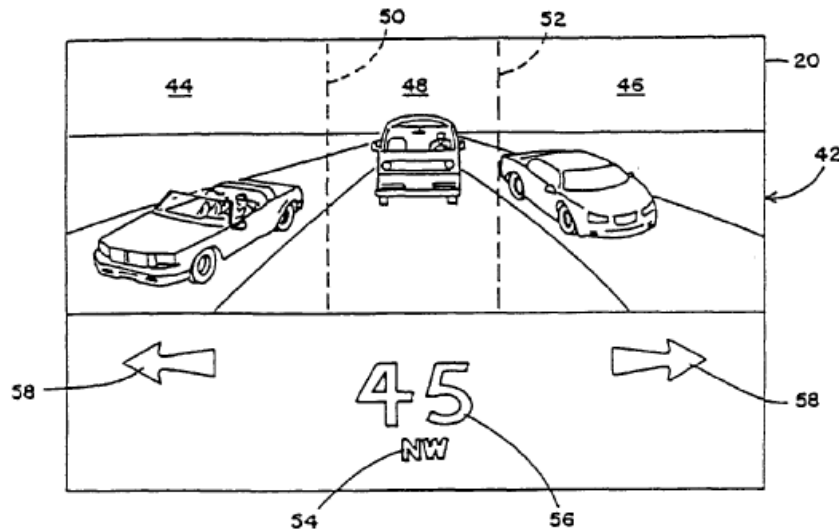


FIG. 3

Figure 3 depicts a display according to the invention. *Id.* at 3:25–26. As shown, image display device 20 displays composite image 42 made up of left image portion 44, right image portion 46, and center image portion 48. *Id.* at 5:48–50. Each image portion 44–48 is reversed from the image as captured by the respective image capture device 14, 16 utilizing conventional techniques. *Id.* at 5:50–53. As may be best seen in Figure 3, the image portions at boundaries 50 and 52 are continuous whereby composite image 42 is a seamless panoramic view directed rearwardly of the vehicle. *Id.* at 5:59–62. As also is apparent from Figure 3, central image portion 48 is narrower than either left image portion 44 or right image portion 46. *Id.* at 5:62–64. This is a result of reducing horizontal field of view 26 of center image capture device 16 sufficiently to move points P, and thus overlap zones 32 and 34, a sufficient distance behind vehicle 10 to reduce redundant and duplicative images between image portions 44–48. *Id.* at 5:64–6:1. Composite image 42 provides a clear image, which avoids confusion and simplifies the task of extracting information from the multiple

image portions 44–48. *Id.* at 6:1–4. As may also be seen by reference to Figure 3, display 20 may additionally include indicia such as the readout of compass 54, vehicle speed 56, turn signals 58, and the like as well as other graphical or video displays, such as a navigation display, a map display, and a forward-facing vision system. *Id.* at 6:4–9.

C. Illustrative Claim

Of the instituted claims, claims 1, 11, 18, 25, 30, 41, and 47 are independent. Claim 1 is reproduced below:

1. A vision system for a vehicle, comprising:

a vehicle equipped with at least two image capture devices, said two image capture devices capturing images external of the vehicle, said two image capture devices having overlapping fields of view;

said vehicle equipped with an image processor, wherein image data captured by said two image capture devices are processed by said image processor, said image processor producing a synthesized image from said image data captured by said two image capture devices, and wherein said synthesized image comprises a composite image of said image data captured by said two image capture devices without duplication of image information;

said vehicle equipped with a display screen displaying said synthesized image, said synthesized image displayed as a single image on a single display screen that is viewable by a driver of said vehicle when the driver is normally operating said vehicle, wherein the displayed image displayed on said single display screen includes an image portion from an image captured by each of said two image capture devices; and

said image processor processing said image data by at least one technique chosen from luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation and image warping compensation.

D. Prior Art Supporting the Instituted Challenges

Petitioner relies upon the following references:

Noso (“Nissan”) ²	JP H3-99952	Apr. 25, 1991	Ex. 1003
Nimura (“Aishin”) ³	JP A64-14700	Jan. 18, 1989	Ex. 1005
Wang et al., <i>CMOS Video Cameras</i> , EURO ASIC	1991, 100-03,		Ex. 1007
May 27-31, 1991 (“Wang”)			
Bendell	US 4,532,550	July 30, 1985	Ex. 1008
Suzuki (“Niles”) ⁴	JP 59-114139	July 2, 1984	Ex. 1009

E. The Instituted Grounds of Unpatentability

We instituted *inter partes* review on the following grounds:

Reference(s)	Basis	Claims Challenged
Nissan	§ 103	1–3, 5–9, 11–15, 25, 26, 28, 29, 41, 42, and 47
Nissan and Wang	§ 103	4, 17, and 27
Nissan and Bendell	§ 103	10
Nissan and Aishin	§ 103	16, 30, 31, 40, and 48
Nissan, Aishin, and Wang	§ 103	18–20
Nissan, Aishin, and Niles	§ 103	32 and 39

II. MOTION TO EXCLUDE

Patent Owner’s Motion to Exclude seeks to exclude Wang (Ex. 1007).

Paper 55, 2–4. As movant, Patent Owner has the burden of proof to

² Nissan is a Japanese language document. Ex. 1003. Unless indicated otherwise, all citations to Nissan in this decision will refer to its certified English language translation. Ex. 1004.

³ Aishin is a Japanese language document. Ex. 1005. Unless indicated otherwise, all citations to Aishin in this decision will refer to its certified English language translation. Ex. 1006.

⁴ Niles is a Japanese language document. Ex. 1009. Unless indicated otherwise, all citations to Niles in this decision will refer to its certified English language translation. Ex. 1010.

establish that it is entitled to the requested relief. *See* 37 C.F.R. § 42.20(c). For the reasons stated below, Patent Owner's Motion to Exclude is denied.

Prior to filing its Motion to Exclude, Patent Owner objected to Exhibit 1007 within the required five business days. In response to these objections, Petitioner served, but did not file, a declaration by Gerard P. Grenier.⁵ *Id.* at 1. Patent Owner objected to the declaration (Ex. 2014) within five business days of service. *Id.* Petitioner served, but did not file, a second declaration by Gerard P. Grenier.⁶ *Id.* at 1–2. Patent Owner objected to the second declaration. *Id.* at 2. Patent Owner preserved the objections by filing a Motion to Exclude Evidence. Paper 37 (now expunged). The Board expunged this motion because it failed to comply with an earlier order stating that a Motion to Exclude Evidence should not include arguments alleging that a reply exceeds the scope of a proper reply. Paper 48 (referring to earlier order at Paper 20). Patent Owner requested rehearing of that order. Paper 51. The Board granted the request for rehearing to permit filing of a revised Motion to Exclude with inappropriate argument removed. Paper 52. Specifically, in a follow-up conference call, we clarified that arguments alleging that Petitioner's Reply was beyond the scope of a proper reply were to be marked in strikethrough. Paper 53, 2. We also asked that Patent Owner consider whether other arguments, such as those related to the weight of evidence rather than admissibility, were appropriate in a motion to

⁵ Petitioner later filed this declaration, with its Opposition to Patent Owner's Motion to Exclude, as Exhibit 1019 ("first Grenier Declaration"). Paper 57, 1.

⁶ Petitioner later filed this declaration, with its Opposition to Patent Owner's Motion to Exclude, as Exhibit 1020 ("second Grenier Declaration"). Paper 57, 1.

exclude evidence. *Id.* at 2–3. Patent Owner’s revised Motion to Exclude Evidence seeks to exclude Wang. Paper 55.

Patent Owner argues that Wang should be excluded because “Valeo fails to demonstrate, as required by 35 U.S.C. § 102(b), that Wang was publicly accessible more than one year prior to the priority date of the ’565 patent.” Paper 55, 4. According to Patent Owner, it is not sufficient that Wang lists a copyright date of “© 1991” because a copyright date does not indicate that the article was publicly accessible. *Id.* at 3 (citing *In re Lister*, 583 F.3d 1307, 1316–17 (Fed. Cir. 2009)). Patent Owner continues that the testimony of Dr. George Wolberg (Ex. 1011, “Wolberg Declaration”) as to Wang’s public accessibility lacks personal knowledge. *Id.* at 4.

Petitioner argues that Wang is admissible, self-authenticating evidence under Federal Rule of Evidence 902(6), and its copyright date establishes a prima facie prior art date of 1991. Paper 57, 3–4 (citing *FLIR Sys., Inc. v. Leak Surveys, Inc.*, Case IPR2014-00411, slip op. at 18–19 (PTAB Sept. 5, 2014) (Paper 9)). Petitioner also submits a declaration from the IEEE custodian of records, Mr. Gerard P. Grenier, to corroborate Wang’s public accessibility in 1991. *Id.* at 4–5 (citing Ex. 1019 ¶¶ 6–9; Ex. 1020 ¶¶ 6–9). Petitioner also argues that Patent Owner’s argument is unsupported by evidence, and that there is no requirement that an expert have personal knowledge of the publication date of a document in order to rely on it as prior art. *Id.* at 5–7.

Patent Owner replies that the second Grenier Declaration (Ex. 1020) is irrelevant under Federal Rule of Evidence 401 because it is not evidence of a prior art date, and is hearsay under Federal Rule of Evidence 802. Paper 58, 2–3.

For the reasons that follow, Patent Owner has not presented a cogent argument that Wang (Ex. 1007) is inadmissible. Significantly, Patent Owner does not contend that Wang is inadmissible under any Federal Rule of Evidence. Rather, Patent Owner argues that Wang (Ex. 1007) is inadmissible because it does not demonstrate adequately that Wang is prior art under 35 U.S.C. § 102(b). *See* Ex. 2013 (objections); Paper 55, 3–5; Paper 58, 2–5. Patent Owner’s arguments regarding the Wolberg and Grenier Declarations (Exs. 1011, 1020, respectively) must be considered in the context that Patent Owner only seeks to exclude Wang and not these Declarations. Consequently, Patent Owner’s argument that Dr. Wolberg lacks the personal knowledge to demonstrate that Wang was publicly accessible is not a challenge to the admissibility of the Wolberg Declaration (Ex. 1011). Instead, this argument is a challenge to the sufficiency of proof that Wang is prior art. Likewise, Patent Owner’s argument that the Grenier Declaration (Ex. 1020) is hearsay and irrelevant is not a challenge to the admissibility of that Declaration. Instead, this argument is a challenge to the sufficiency of proof that Wang is prior art.⁷ In sum, Patent Owner argues that Petitioner has not demonstrated sufficiently that Wang is prior art under 35 U.S.C. § 102(b) and does not present a cogent argument regarding the admissibility of Wang.

Arguing that Wang is not prior art under 35 U.S.C. § 102(b) is a challenge to the sufficiency or weight to be given to Wang. Such argument is not proper in a motion to exclude, which is a challenge to the admissibility

⁷ Although the second Grenier Declaration is filed as an exhibit, it is supplemental evidence and may only be considered with regard to the admissibility of Wang (Ex. 1007). *See* 37 C.F.R. § 42.64(b)(2).

of evidence, not a challenge to sufficiency. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (August 14, 2012) (A motion to exclude may not be used to challenge the sufficiency of the evidence to prove a particular fact.). Patent Owner’s preliminary response and response were opportunities to challenge whether Petitioner has sufficiently demonstrated that Wang is prior art under 35 U.S.C. § 102(b). Patent Owner elected not to make such a challenge.

We determine that Patent Owner has not met its burden of proof to establish that Wang is inadmissible under the Federal Rules of Evidence. *See* 37 C.F.R. §§ 42.20(c), 42.62(a). A motion to exclude is a challenge to admissibility, and is not the proper venue to challenge Wang’s status as prior art. Patent Owner’s Motion to Exclude is denied.

III. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1281–82 (Fed. Cir. 2015) (“Congress implicitly adopted the broadest reasonable interpretation standard in enacting the AIA,” and “the standard was properly adopted by PTO regulation.”). Under the broadest reasonable interpretation, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

In the Decision on Institution, we interpreted various claim terms of the '565 patent as follows:

Claim Term (Claims)	Interpretation
“composite image” (1, 11, 13–15, 18, 25, 30, 41, 43, 44, 46, and 47)	a single, combined image
“without duplication of image information” (1, 11, 18, 25, 30, 41, 43, 44, 46, and 47)	with minimal multiple exposure in the composite image

See Dec. on Inst. 7–12. The parties do not dispute these interpretations in their Patent Owner Response and Reply. We adopt the above claim constructions based on our previous analysis, and see no reason to deviate from those constructions based on the complete record now before us.

1. “*image portion from an image captured*” (claims 1, 11, 18, 25, 30, 41, and 47)

Independent claims 1, 11, 18, 25, 30, 41, and 47 recite “image portion from an image captured.” Petitioner does not propose a construction of this term. Patent Owner proposes that “image portion [from an image captured]” be construed to mean “a derived part of a captured image that is less than the entire captured image.” PO Resp. 5–6 (citing Ex. 1001, 7:22–25, 9:3–8; Ex. 2006 (defining “portion” as “a part of a larger amount, area, etc.” and “an often limited part of a whole.”)).

Petitioner, in its Reply, disputes Patent Owner’s distinction between a portion of an image captured and a portion of an image displayed, and argues that a person of ordinary skill in the art would not have made such a distinction. Pet. Reply 2–4 (citing Reply Declaration of Dr. George Wolberg, Ex. 1012 ¶¶ 3–6). At the hearing, however, Petitioner agreed that “portion” excludes the whole. Tr. 9:5–11.

Petitioner also objects to Patent Owner’s proposed construction to the extent that it implies an “image portion” can be *only* of a captured image, and not of a displayed image. While it may be possible to have an “image portion” from an image displayed, we need not address this concern because the claims themselves all require that the recited “image portion” be “from an image captured.”

The ’565 patent does not define the term “image portion.” Patent Owner cites column 7, lines 22 to 25, but that disclosure is not determinative because it states only a preference. Ex. 1001, 7:22–25 (“However, the portion of the image displayed is *preferably* biased toward the downward portion of the captured image . . .”) (emphasis added). Patent Owner also cites column 9, lines 3 to 8, but that disclosure does not inform us as to whether the described image portions—right image portion 46’, left image portion 44’, and central image portion 48’—are less than the entire image captured by image capture devices 14, 16.

Elsewhere in the ’565 patent, the terms “left image portion 44,” “right image portion 46,” and “center image portion 48” are used while describing Figure 3. *Id.* at 5:48–50. The ’565 patent states explicitly that “[e]ach image portion 44–48 is reversed from the image as captured by the respective image capture device 14, 16 utilizing conventional techniques.” *Id.* at 5:50–53. The ’565 patent does not, however, describe each image portion 44, 46, and 48 as comprising less than the entire image captured by the respective image captures devices 14, 16. Based on our review, there is no such disclosure anywhere in the ’565 patent. Accordingly, we are not persuaded that Patent Owner’s proposed construction is the broadest reasonable interpretation.

Regardless of how “image portion” is construed, we note that the independent claim limitations in which “image portion” is recited set a minimum—not a maximum—for what must be included in a displayed image. For example, independent claims 1, 30, 41, and 47 recite “the displayed [composite] image displayed on said single display screen *includes* an image portion” (emphasis added). The other independent claims recite “image portion” in similar context. *See, e.g.*, Claims 11, 18, and 25 (“the displayed image *including* an image portion” (emphasis added)). These limitations require that the displayed image include an “image portion,” but do not preclude the displayed image from including more than a portion. The limitations do not, for example, require that the displayed image include no more than an image portion.

Patent Owner’s definition that a portion is “an often limited part of a whole” implies that a portion also can include the whole, and we discern nothing in the Specification inconsistent with that ordinary meaning. *See* Ex. 2006.

We determine that “image portion” does not require further express construction.

*B. Claims 1–3, 5–9, 11–15, 25, 26, 28, 29, 41, 42, and 47 –
Obviousness over Nissan*

Petitioner argues that claims 1–3, 5–9, 11–15, 25, 26, 28, 29, 41, 42, and 47 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan. Pet. 25–47.

Patent Owner counters that (1) Nissan does not teach an “image portion,” as recited in independent claims 1, 11, 25, 41, and 47; (2) Nissan does not teach that “fields of view . . . are dynamically adjustable,” as

recited in dependent claim 7; and (3) Nissan does not teach that “duplication of objects . . . is not present in said displayed composite image.” PO Resp. 6–13.

Upon consideration of the parties’ contentions and supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that claims 1–3, 5, 6, 8, 9, 11–15, 25, 26, 28, 29, 41, 42, and 47 are unpatentable as obvious over Nissan. Petitioner has not established, by a preponderance of the evidence, that claim 7 is unpatentable as obvious over Nissan.

1. Nissan (Exhibit 1004)

Nissan describes a device for displaying the positions of other vehicles, the states of obstructions, the center line, and other information about the vehicle’s surroundings to the driver by using cameras. Ex. 1004, 2:16–20. The system of Nissan includes a plurality of cameras installed in a vehicle, a means for performing a perspective conversion that converts the images from those cameras to other coordinates, a means for combining the converted images into one image related to an image of the vehicle itself, and a display for displaying the image to the occupants. *Id.* at 3:15–21.

Figure 1 of Nissan is reproduced below:

Figure 1

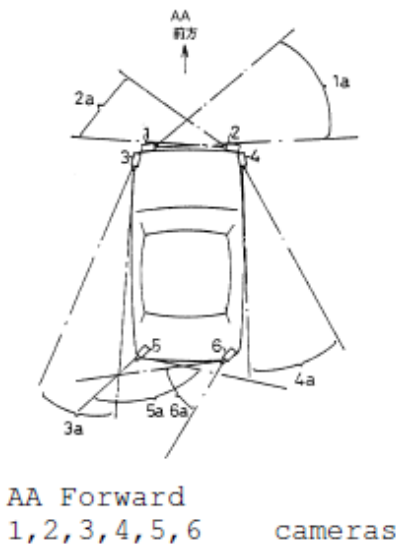


Figure 1 is an overhead view of a vehicle equipped with the system of Nissan. *Id.* at 3:34–35. As depicted in Figure 1, a plurality of cameras 1–6 are setup so that the respective fields of view, 1a–6a, cover the environment surrounding the vehicle. *Id.* at 3:36–38. Images from the cameras are input and converted to other coordinates by a perspective conversion. *Id.* at 4:15–17. The converted images are then combined into one image by image display unit 8 and displayed on monitor 9 positioned at the driver’s seat. *Id.* at 4:17–20. The vehicle’s position is drawn simultaneously in a diagram. *Id.* at 4:22–24. The displayed position of the vehicle is offset from the center of the image screen depending on signals corresponding to the gear position, the vehicle speed, and the operation of the directional indicator. *Id.* at 4:24–27.

Figure 3(a) of Nissan is reproduced below.

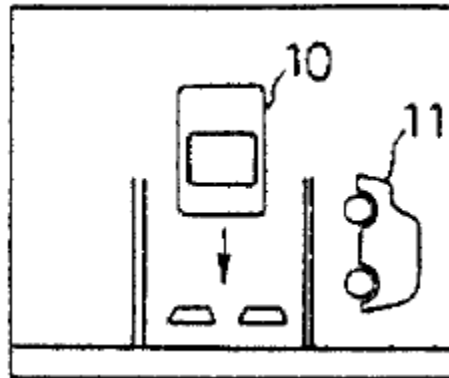


Figure 3(a) is an example of the display results on display when backing up. *Id.* at 4:29–31, 7:30–32. Specifically, Figure 3(a) shows backing up in the direction of the arrow and is a fixed display with vehicle 10 in the upper part in the center. *Id.* at 4:31–33. Neighboring vehicle 11 is displayed in a side view. *Id.* at 4:33–35. According to Nissan, by looking at the display device, the driver can behave appropriately when backing up. *Id.* at 6:23–25.

2. Analysis

Petitioner has established, by a preponderance of the evidence, that claims 1–3, 5, 6, 8, 9, 11–15, 25, 26, 28, 29, 41, 42, and 47 are unpatentable as obvious over Nissan.

For example, we are persuaded that the record supports a finding that the limitations of independent claim 1 listed in the first column of the following table are taught by the corresponding disclosure of Nissan identified in the second column of the table:

<i>Independent Claim 1</i>	<i>Nissan</i>
a vehicle equipped with at least two image capture devices	Figure 1, vehicle with cameras 1–6

<i>Independent Claim 1</i>	<i>Nissan</i>
said two image capture devices capturing images external of the vehicle	Figure 1, any two of cameras 1–6
said two capture devices having overlapping fields of view	Figure 1, e.g., camera views 1a and 2a, or camera views 3a and 5a
an image processor	Image converter 7 and image display unit 8
wherein image data captured by said two image capture devices are processed by said image processor	“In an image converter 7, the images from cameras 1 to N are input and converted to other coordinates by a perspective conversion.” Ex. 1004, 4:15–17.
said image processor producing a synthesized image from said image data captured by said two image capture devices	“the images from cameras 1 to N . . . combined into one image by an image display unit 8.” <i>Id.</i> at 4:15–18.
a display screen displaying said synthesized image	“a display for displaying said image to the occupants.” <i>Id.</i> at 3:20–21.
said synthesized image displayed as a single image on a single display screen that is viewable by a driver of said vehicle when the driver is normally operating said vehicle	“displayed on a TV monitor 9 positioned at the driver’s seat.” <i>Id.</i> at 4:18–20.
wherein the displayed image displayed on said single display screen includes an image portion from an image captured by each of said two image capture devices	“In an image converter 7, the images from cameras 1 to N are input and converted to other coordinates by a perspective conversion, are combined into one image by an image display unit 8, then displayed on a TV monitor 9 positioned at the driver’s seat.” <i>Id.</i> at 4:15–20, Fig. 3(a).

Independent claim 1 also recites, “said image processor processing said image data by at least one technique chosen from luminant blending,

chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation and image warping compensation.” Petitioner argues that “chrominant and luminant blending would have been understood from Nissan’s disclosures of color image processing and color display, which require chrominant blending, and infrared image processing for nighttime recognition of obstacles, which requires luminant blending for displaying gray-scale images.” Pet. 27. Petitioner also cites Dr. Wolberg for the following:

Nissan contemplates use of a color TV monitor to display color images. Pet. Ex. 1004 at p. 7, ll. 6-7. Chrominant blending must be used to average color images, which typically consists of three color components. See my state of the art discussion, ¶62, *supra*. Nissan also contemplates use of infrared cameras for night vision. Pet. Ex. 1004 at p. 7, ll. 9-11. Luminant blending is used to average the infrared data, which consists of a single value per pixel.

Ex. 1011 ¶ 101. We are persuaded by the above-quoted analysis of Dr. Wolberg.

Independent claim 1 also recites “wherein said synthesized image comprises a composite image of said image data captured by said two image capture devices without duplication of image information.” Nissan teaches that “the images from cameras 1 to N are input and converted to other coordinates by a perspective conversion [and] are combined into one image by an image display unit 8.” Ex. 1004, 4:15–18. As shown in Figure 3(a), when backing up, Nissan combines the images from a rear-facing camera showing the area behind the vehicle with images from a side-view camera to form one image that is displayed to the driver. *Id.* at Fig. 3(a), 4:29–35.

With respect to the combined image being “without duplication of image information,” Petitioner cites Dr. Wolberg for the following:

123. Nissan performs a perspective transformation to display a combined image from multiple cameras on a single display to a driver. See Pet. Ex. 1004 at p. 3, ll. 17-19; p. 5, ll. 12-30. The perspective transformation performed in Nissan geometrically aligns the images from the different cameras on the vehicle. A person of ordinary skill in the art would have appreciated that this process in Nissan *inherently* removes multiple exposure effects (duplication). Indeed, one of the primary purposes of geometric alignment is to remove redundancy in overlapping regions of images.

124. Further, a person of ordinary skill in the art would have found it obvious prior to May 1995 to produce a composite image without any duplication of image information. In order to reduce duplication in a composite image, one must bring the images captured by various cameras into geometric alignment. This is known in the art as image registration, a concept that was well-known prior to May 1995. See *e.g.*, Pet. Ex. 1004. Nissan performs such geometric alignment by performing a perspective conversion among the images. Specifically, Nissan brings all the images into a single coordinate system, from the independent camera screen coordinates to the road surface plane. Pet. Ex. 1004 at p. 5, ll. 25-30. *Whenever such a perspective transformation is performed, duplication of image information in overlapping regions of the camera fields of view would be minimized because the duplicate image portions are overlaid upon each other such as to reduce multiple exposure effect.*

Ex. 1011 ¶¶ 123–24 (emphases added). We are persuaded by the above-quoted analysis of Dr. Wolberg.

We also are persuaded that Petitioner’s arguments and evidence with respect to claims 2, 3, 5, 6, 8, 9, 11–15, 25, 26, 28, 29, 41, 42, and 47 support Petitioner’s contentions.

Patent Owner counters that (1) Nissan does not teach an “image portion,” as recited in independent claims 1, 11, 25, 41, and 47; (2) Nissan does not teach that “fields of view . . . are dynamically adjustable,” as recited in dependent claim 7; and (3) Nissan does not teach that “duplication of objects . . . is not present in said displayed composite image.” PO Resp. 6–13. We analyze these arguments in turn.

a. “image portion”

Patent Owner argues that Nissan does not disclose an “image portion,” as recited by claims 1, 11, 25, 41, and 47. PO Resp. 6–10. Specifically, Patent Owner argues that Nissan averages *entire* camera images, not just a *portion* of those of images. *Id.* at 8–9.

Petitioner counters that a person of ordinary skill in the art would have understood that Nissan necessarily crops images in order to shift them, as it discloses, and would have known to discard some image portions in the process of creating a composite image, as Nissan also discloses. Pet. Reply 6–9. Petitioner also argues that, even if “image portion” excludes the entirety of the image captured, the disputed claim limitation nevertheless encompasses the entire captured image because it uses the open-ended language “includes.” *Id.* at 10–11.

We are persuaded by Petitioner’s arguments. Although the parties agree that the claim term “image portion from an image captured” excludes the entire image, the independent claims all recite the open-ended language “includes” (claims 1, 30, 41, and 47) or “including” (claims 11, 18, and 25). The claims, therefore, do not preclude the displayed image from having *more* than the recited “image portion.” Accordingly, even assuming that

Patent Owner's characterization of Nissan is accurate, we are not persuaded that Nissan does not teach these limitations.

b. Claim 7

Patent Owner argues that Nissan does not teach “said fields of view of said two image captures devices are dynamically adjustable,” as recited in claim 7, because the passage cited by Petitioner describes the adjusting of only what is displayed on the TV monitor, not what is captured by the image capture devices. PO Resp. 10–11.

Petitioner replies that “[t]he [person of ordinary skill in the art] would have understood from this disclosure that the fields of view of the cameras in Nissan would necessarily have to be dynamically adapted depending on the running state of the vehicle.” Pet. Reply 11 (citing Ex. 1004, 6:34–7:4; Ex. 1012 ¶¶ 19–22; Ex. 1001, 5:42, 6:12–15).

We are not persuaded by Petitioner's arguments. Petitioner cites only page 7, lines 1–4 of Nissan, which teaches that “at fast speeds, *the image on the TV monitor* is compressed and displayed, and *the display region* is widened and displayed, thus, more effective images can be obtained.” Pet. 30; Ex. 1004, 7:1–4 (emphases added). This passage describes manipulation of the image being displayed, but teaches nothing about whether the fields of view of the image capture devices are dynamically adjusted. Moreover, Petitioner does not argue that the fields of view of the image capture devices necessarily must be dynamically adjustable in order for Nissan to manipulate the images as described. Accordingly, we are not persuaded that Petitioner has shown, by a preponderance of the evidence, that Nissan teaches this limitation.

c. Claim 13

Patent Owner argues that Nissan does not teach “duplication of objects that are captured in the overlapping fields of view of said side and center image captured devices is not present in said displayed composite image,” as recited in claim 13, because Nissan does not teach that duplication of image information is entirely eliminated. PO Resp. 11–13. According to Patent Owner, “duplication of objects . . . is not present,” as recited in claim 13, must require more than “without duplication of image information,” as recited in claim 11, from which claim 13 depends, due to the canon of claim differentiation. *Id.* at 11–12. Patent Owner concludes that the averaging function used by Nissan to combine multiple camera images results, at best, in minimizing or reducing duplication, but does not eliminate it, as even Petitioner’s expert concedes. *Id.* at 12–13 (citing Ex. 1004, 6:1–17; Ex. 2007 (Declaration of Dr. Matthew A. Turk) ¶¶ 42, 45, 46; Ex. 1011 (Wolberg Decl.) ¶ 124).

Petitioner replies that the broadest reasonable interpretation of “duplication of objects . . . is not present,” does not require complete elimination of duplication of image information. Pet. Reply 12. According to Petitioner, claim differentiation does not apply because a person of ordinary skill in the art would have understood “image information” and “objects” to be synonymous. *Id.* at 12–13 (citing *Power Mosfet Techs., L.L.C. v. Siemens AG*, 378 F.3d 1396, 1410 (Fed. Cir. 2004)). Petitioner argues that, in the context of the ’565 patent, the language requires only “reduction or minimization of multiple exposure of objects, which Nissan discloses by performing the averaging function of the transformed images.” *Id.* at 12.

We are persuaded by Petitioner’s arguments. The ’565 patent does not use the phrase “duplication of objects . . . is not present” apart from the claims. In the context of claim 13, “objects that are captured in the overlapping fields of view of said side and center image capture[] devices” necessarily comprises “image information” representing those objects. We, therefore, credit the testimony of Dr. Wolberg that a person of ordinary skill in the art would have understood that the complete elimination of objects is not possible for the same reasons as complete elimination of “image information” is not possible. Ex. 1012 ¶ 24. We, therefore, construe “duplication of objects . . . is not present” to have the same scope as “without duplication of image information”: with minimal multiple exposure in the composite image.

Thus, even assuming that Patent Owner’s characterization of Nissan as not entirely eliminating duplicate information is correct, we are nevertheless persuaded that Nissan teaches this limitation because its averaging function results in minimal multiple exposure in the composite image.

3. Conclusion

For the foregoing reasons, we conclude that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–3, 5, 6, 8, 9, 11–15, 25, 26, 28, 29, 41, 42, and 47 are unpatentable as obvious over Nissan. Petitioner has not shown, by a preponderance of the evidence, that claim 7 is unpatentable as obvious over Nissan.

C. Claims 4, 17, and 27 – Obviousness over Nissan and Wang

Petitioner argues that claims 4, 17, and 27 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan and Wang. Pet. 47–48.

Patent Owner refers to its arguments above regarding Nissan, and argues that Wang does not cure those deficiencies. PO Resp. 13.

Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that claims 14, 17, and 27 are unpatentable as obvious over Nissan and Wang.

1. Wang (Exhibit 1007)

Wang describes a single chip CMOS video camera. Ex. 1007, Abstract. The chip comprises a 312x287 pixel photodiode array together with all the necessary sensing, addressing, and amplifying circuitry, as well as a 1,000 gate logic processor, which implements synchronization timing to deliver a fully-formatted composite video signal and a further 1,000 gate logic processor, which implements automatic exposure control over a wide range. *Id.*

2. Analysis

Petitioner has demonstrated, by a preponderance of the evidence, that claims 4, 17, and 27 are unpatentable as obvious over Nissan and Wang.

For example, claim 4 recites "wherein said at least two image capture devices comprise multi-pixel imaging arrays, and wherein said multi-pixel imaging arrays comprise CMOS imaging arrays." Claims 17 and 27 recite similarly "wherein each of said [three] image capture devices comprises a CMOS imaging array." Wang teaches a 312x287 pixel CMOS imaging array. Ex. 1007, Abstract, Figs. 1, 2. Petitioner argues that "a person of ordinary skill in the art would have been motivated to employ CMOS imaging arrays in the vision system of Nissan." Pet. 47. Petitioner also cites Dr. Wolberg for the following:

Given that Nissan comments that the type of camera does not matter, as long as the camera acquires images, it would have been obvious to combine Nissan and Wang because Wang provides a type of camera that acquires images. A CMOS imaging array is specifically designed to capture image data. Accordingly, a person of ordinary skill in the art, having the benefit of the Nissan disclosure, would have been motivated to look to Wang, which provides a type of camera for acquiring images, and to modify the vision system of Nissan with a CMOS imaging array image capture device.

Ex. 1011 ¶ 133. We are persuaded by the above-quoted analysis of Dr. Wolberg.

Claims 17 and 27 recite limitations similar to claim 4. We are persuaded that Petitioner's arguments and evidence with respect to claims 17 and 27 support Petitioner's contentions for the same reasons discussed above with respect to claim 4.

Patent Owner refers to its arguments above regarding Nissan, and argues that Wang does not cure those deficiencies. PO Resp. 13. As discussed above, we are not persuaded by Patent Owner's arguments regarding Nissan.

3. Conclusion

Petitioner has established, by a preponderance of the evidence, that claims 4, 17, and 27 are unpatentable as obvious over Nissan and Wang.

D. Claim 10 – Obviousness over Nissan and Bendell

Petitioner argues that claim 10 is unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan and Bendell. Pet. 48–49. In support of this ground of unpatentability, Petitioner explains how each claim limitation is taught or suggested by Nissan and Bendell and relies upon the Declaration of Dr. Wolberg. *Id.* (citing Ex. 1011 ¶¶ 113–15, 138–41).

Patent Owner refers to its arguments above regarding Nissan, and argues that Bendell does not cure those deficiencies. PO Resp. 13–14.

Upon consideration of the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claim 10 is unpatentable as obvious over Nissan and Bendell.

1. Bendell (Exhibit 1008)

Bendell describes solid-state color television cameras having a variable apertured shutter for varying the exposure time. Ex. 1008, 1:5–8. For example, two similar shutters are arranged coaxially. *Id.* at 1:56–57. One shutter motor is locked to vertical sync while the other shutter motor, which is also locked to vertical sync, is provided with a variable phasing control. *Id.* at 1:57–60. Variation of the relative phase of the two shutters changes the effective exposure time. *Id.* at 1:60–62. A variable shutter exposure control permits the camera operator to select different exposure techniques for artistic or special effects purposes. *Id.* at 1:63–65.

2. Analysis

In light of the arguments and evidence, Petitioner has demonstrated, by a preponderance of the evidence, that claim 10 is unpatentable as obvious over Nissan and Bendell.

Claim 10 recites “wherein said two image capture devices have variable exposure periods.” Bendell teaches “solid-state color cameras having a variable apertured shutter for varying the exposure time.” *Id.* at 1:7–8. Petitioner argues that “[i]t would have been obvious and predictable for a person of ordinary skill in the art to employ cameras with variable exposure periods in the vision system of Nissan to enhance the intensity of

the images captured.” Pet. 48. Petitioner also cites Dr. Wolberg for the following:

It would have been obvious to combine Nissan and Bendell to achieve a more robust type of camera, i.e., a camera with variable exposure periods, for the vision system of Nissan. Given Nissan’s commentary that any suitable camera that acquires images could be employed in the vision system of Nissan, a person of ordinary skill in the art would be motivated to provide a camera having robust capabilities, which can provide a combination of features, including a variable exposure period, such as the camera disclosed in Bendell. Therefore, a person of ordinary skill in the art would readily turn to a combination of Nissan and Bendell in order to provide a better image capture device, i.e., one that helps normalize the intensity of the image data, in the Nissan vision system.

Ex. 1011 ¶ 140. We are persuaded by the above-quoted analysis of Dr. Wolberg.

Patent Owner refers to its arguments above regarding Nissan, and argues that Bendell does not cure those deficiencies. PO Resp. 13–14. As discussed above, we are not persuaded by Patent Owner’s arguments regarding Nissan.

3. Conclusion

Petitioner has demonstrated, by a preponderance of the evidence, that claim 10 is unpatentable as obvious over Nissan and Bendell.

E. Claims 16, 30, 31, 40, and 48 – Obviousness over Nissan and Aishin

Petitioner argues that claims 16, 30, 31, 40, and 48 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan and Aishin. Pet. 49–53.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin does not cure those deficiencies. PO Resp. 14.

Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that claims 16, 30, 31, 40, and 48 are unpatentable as obvious over Nissan and Aishin.

1. Aishin (Exhibit 1006)

Aishin describes a display apparatus for displaying, as a projected image by a video camera, a field of rear vision at the time of reverse travel of a vehicle, in which a predicted path of the vehicle is superimposed on the projected image. Ex. 1006, 2–3. Aishin describes a camera for photographing a field of rear vision, a steering sensor for detecting a steering angle of a steering wheel, an image processing device for storing an image of a predicted path corresponding to a steering angle of the steering wheel and for reading an image of a predicted path based on the signal from the steering sensor at the time of reverse travel, and a display device for superimposing and displaying a projected image from the camera and the image of a predicted path from the image processing device. *Id.* at 4–5. Specifically, path superposition device 6 takes as input (1) the image of a field of rear or lateral vision from video camera 7 on the vehicle; and (2) the predicted locus ready by computer 2 for locus calculation, to superimpose and display the image and the predicted locus on display 8. *Id.* at 6.

Figure 3 of Aishin is reproduced below.

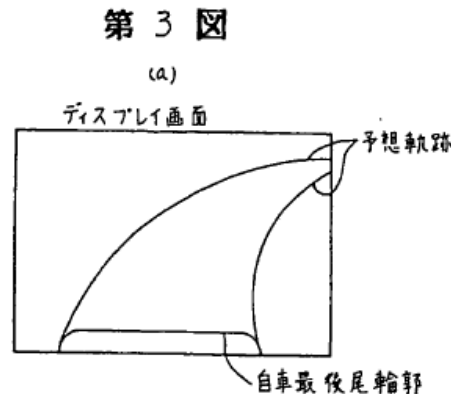


Figure 3 shows an exemplary display of a predicted path obtained by the predicted path display device of the vehicle. Ex. 1006, 6.

2. Analysis

In light of the arguments and evidence, Petitioner has demonstrated, by a preponderance of the evidence, that claims 16, 30, 31, 40, and 48 are unpatentable as obvious over Nissan and Aishin.

For example, claim 16 recites “an electronically generated graphic overlay seen superimposed on said displayed composite image in order to enhance the driver’s ability to maneuver the vehicle rearwardly.” Petitioner cites Nissan for teaching that vehicle image 10 is “drawn” on the display. Pet 50 (citing Ex. 1004, 4:22–24, 7:32, Fig. 3). Petitioner also cites Aishin for teaching “a display device for superposing and displaying a projected image by the camera and an image of a predicted path by the image processing device.” *Id.* (quoting Ex. 1006, 2, 6). Although claim 11, from which claim 16 depends, includes a limitation not recited in claim 1—i.e., “and directed rearwardly with respect to the direction of travel of said vehicle”—this feature is shown in Figure 1 of Nissan, which is cited by Petitioner. We, therefore, are persuaded that Petitioner’s citations support

Petitioner's contention. Petitioner argues that “[a] person of ordinary skill in the art would have been motivated to combine Nissan and Aishin (Ex. 1006) to enhance the displayed composite image of Nissan to include an electronic overlay that provides additional information to the driver when traveling rearward.” *Id.* at 49. Petitioner also cites Dr. Wolberg for the following:

I believe a person of ordinary skill in the art would have recognized the benefit of providing a graphic overlay as disclosed in Aishin superimposed on the composite image generated in Nissan. To improve and enhance the vision system of Nissan, one of ordinary skill in the art would have found it entirely predictable and a matter of common sense to provide a graphic overlay as disclosed in Aishin that could be superimposed on the combined single image provided to the driver in the vision system of Nissan.

Ex. 1011 ¶ 154. We are persuaded by the above-quoted analysis of Dr. Wolberg.

Claims 30 and 48 recite a commensurate limitation. Petitioner refers back to its cited support for claim 16. Pet. 51, 53. Claim 30 also recites “wherein said graphic overlay is enabled when the vehicle’s gear actuator is selected to be in reverse gear.” Petitioner cites Aishin for teaching that “predicted path[s] are displayed on a screen *at the time of reverse travel of a vehicle.*” *Id.* at 51 (quoting Ex. 1006, 4) (emphasis added). We are persuaded that Petitioner’s citations are sufficient.

Claim 31 recites:

wherein at least one of (a) said graphic overlay has a form that responds to the rate of turn of the vehicle, (b) said graphic overlay has a form that responds to at least one of the vehicle’s steering system, the vehicle's differential system and a compass and ([c]) said graphic overlay has a form that is a function of at least one of the direction or travel and speed of the vehicle.

Petitioner cites Aishin with respect to (a) and (b) for teaching “an image processing device for . . . reading an image of a predicted path on the basis of a signal from the steering sensor at the time of reverse travel of a vehicle.” Pet. 51–52 (quoting Ex. 1006, 4–5). Petitioner cites Aishin with respect to (c) for teaching that the graphic overlay is responsive to the direction of the vehicle. *Id.* at 52 (citing Ex. 1006, 5 (“[W]hen a handwheel is manipulated, a predicted path corresponding to a steering angle of the handwheel is read from an image processing device, and the predicted path is superimposed on a projected image of a field of rear vision.”)). We are persuaded that Aishin, as cited by Petitioner, supports Petitioner’s contentions.

Claim 40 recites a combination of limitations from claim 1. Petitioner incorporates by reference the support it cites for claim 1. *Id.* We are persuaded that Petitioner’s citations are sufficient.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin does not cure those deficiencies. PO Resp. 14. As discussed above, we are not persuaded by Patent Owner’s arguments regarding Nissan.

3. Conclusion

Petitioner has demonstrated, by a preponderance of the evidence, that claims 16, 30, 31, 40, and 48 are unpatentable as obvious over Nissan and Aishin.

F. Claims 18–20 – Obviousness over Nissan, Aishin, and Wang

Petitioner argues that claims 18–20 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan, Aishin, and Wang. Pet. 53–56.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin and Wang do not cure those deficiencies. PO Resp. 14–15.

Upon consideration of the parties’ contentions and supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that claims 18–20 are unpatentable as obvious over Nissan, Aishin, and Wang.

1. Analysis

Independent claim 18 recites a combination of limitations from claims 1, 11, and 15–17. Petitioner incorporates by reference the support in Nissan, Aishin, or Wang that it cites for each of those claims. *Id.* at 54–55. We are persuaded that Petitioner’s citations support Petitioner’s contentions.

Claim 19 recites a combination of limitations from claims 12 and 30. Petitioner incorporates by reference the support in Nissan and Aishin that it cites for each of those claims. *Id.* at 55. We are persuaded Petitioner has made a sufficient showing.

Claim 20 recites:

wherein at least one of (a) said graphic overlay has a form that responds to the rate of turn of the vehicle, (b) said graphic overlay has a form that responds to at least one of the vehicle’s steering system, the vehicle’s differential system and a compass, (c) said at least three image capture devices are at substantially the same height on the vehicle and (d) said at least three image capture devices are aimed along non-parallel axes.

Petitioner cites Aishin with respect to (a) and (b) for teaching “an image processing device for . . . reading an image of a predicted path on the basis of a signal from the steering sensor at the time of reverse travel of a vehicle.” *Id.* at 55–56 (citing Ex. 1006, 4–5). Because claim 20 requires

only “at least one of” (a), (b), (c), and (d), we are persuaded by Petitioner’s showing.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin and Wang do not cure those deficiencies. PO Resp. 14–15. As discussed above, we are not persuaded by Patent Owner’s arguments regarding Nissan.

2. Conclusion

Petitioner has demonstrated, by a preponderance of the evidence, that claims 18–20 are unpatentable as obvious over Nissan, Aishin, and Wang.

G. Claims 32 and 39 – Obviousness over Nissan, Aishin, and Niles

Petitioner argues that claims 32 and 39 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nissan, Aishin, and Niles. Pet. 57–60.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin and Niles do not cure those deficiencies. PO Resp. 15.

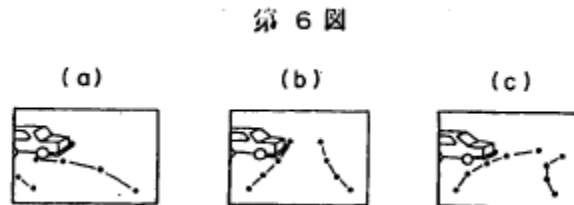
Upon consideration of the parties’ contentions and supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that claims 32 and 39 are unpatentable as obvious over Nissan, Aishin, and Niles.

1. Niles (Exhibit 1010)

Niles describes rearward view monitoring system that includes a monitor at the driver’s seat that displays plural pairs of distance markers corresponding to a vehicle width. Ex. 1010, 1–3. The system includes a camera, a monitor mounted at the driver’s seat, a sensor for sensing distance between the vehicle and a rearwardly positioned obstacle, vehicle speed, direction of vehicle rearward travel, and a marker signal generating circuit, which receives as inputs signals from the sensor and which generates a

marker signal as necessary. *Id.* at 3. The markers are superimposed on the displayed image. *Id.* For example, a single marker may be displayed every one meter. *Id.* When a tire direction sensor is applied, an anticipated rearward path of travel can be displayed with the markers. *Id.* at 4.

Figure 6 of Niles is reproduced below.



As shown in Figure 6, markers 4 can be displayed curving along the anticipated rearward path of travel of the vehicle, and thus the monitor can display the vehicle's rearward direction more clearly. Ex. 1010, 4.

2. Analysis

Claims 32 recites “wherein said graphic overlay comprises distance indicia indicating distances behind the vehicle of objects juxtaposed within a grid.” Petitioner cites Niles for teaching distance markers 4 that may be electronically superimposed on a displayed image. Pet. 57–58 (citing Ex. 1010, 3–4). We are persuaded that Niles, as cited by Petitioner, supports Petitioner's contention.

With respect to motivation to combine, Petitioner argues that:

Given that both Aishin and Niles are directed to display of electronic graphical overlays (see Ex. 1011 at ¶¶117-20), a person of ordinary skill in the art would have been motivated to combine Nissan, Aishin, and Niles (Ex. 1010) to enhance the displayed composite image of Nissan to include a graphic overlay that provides additional information to the driver when traveling rearward.

Pet. 57. Petitioner also cites Dr. Wolberg for the following:

It would have been obvious to combine Niles with Nissan and Aishin to enhance the graphical overlay on the composite image that results from a combination of Nissan and Aishin by adding markers dynamically adjustable based on distance of objects from the vehicle. It would be entirely predictable to include markers on a grid indicating distance indicia, providing the driver with perspective with respect to how far the equipped vehicle is from obstacles in the vehicle's surrounding. It would be a matter of logical improvement to include such distance information as described in Niles, on an electronically superimposed graphical overlay that provides a predicted path of the vehicle and an outline of the vehicle, as described in Aishin, to make the graphic overlay provided to the driver more robust.

Ex. 1011 ¶ 178. We are persuaded by the above-quoted analysis of Dr. Wolberg.

Claim 39 recites “wherein the displayed image includes a dead space which would be occupied by said vehicle in the fields of view of said two image capture devices.” Petitioner incorporates by reference the support it cites for claim 32, from which it depends, and claim 44, which recites a similar limitation. Pet. 59. Petitioner cites Nissan for teaching a dead space where there is no image information and in which an outline of vehicle 10 is drawn. Pet. 42 (citing Ex. 1004, 4:22–23, Fig. 3(a)). We are persuaded that Nissan, as cited by Petitioner, supports Petitioner's contention.

Patent Owner refers to its arguments above regarding Nissan, and argues that Aishin and Niles do not cure those deficiencies. PO Resp. 15. As discussed above, we are not persuaded by Patent Owner's arguments regarding Nissan.

3. *Conclusion*

Petitioner has demonstrated, by a preponderance of the evidence, that claims 32 and 39 are unpatentable as obvious over Nissan, Aishin, and Niles.

IV. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that claims 1–5, 8–13, 15–20, 25–32, 39–42, 47, and 48 of the '565 patent are unpatentable under 35 U.S.C. § 103(a). Petitioner has not shown, by a preponderance of the evidence, that claim 7 of the '565 patent is unpatentable under 35 U.S.C. § 103(a).

V. ORDER

Accordingly, it is

ORDERED that claims 1–5, 8–13, 15–20, 25–32, 39–42, 47, and 48 of the '565 patent are held unpatentable;

ORDERED that claim 7 is not held unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied*; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2014-00220
Patent 7,859,565 B2

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