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Paper 50
Entered: November 04, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

EYESMATCH LTD.,
Patent Owner.

IPR2024-00856
Patent 8,982,109 B2

Before THOMAS L. GIANNETTI, NEIL T. POWELL, and MICHAEL T. CYGAN, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge.*

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)
ORDER
Denying Patent Owner's Motion to Strike
37 C.F.R. § 42.5

I. INTRODUCTION

Google LLC, Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–18 (the "challenged claims") of U.S. Patent No. 8,982,109 B2 (Ex. 1001, "the '109 patent"). EyesMatch Ltd. ("Patent Owner") filed a Preliminary Response (Paper 12, "Prelim. Resp.").

The Board had authority to determine whether to institute *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a) (2003). We determined that Petitioner established a reasonable likelihood that it would prevail with respect to at least one claim challenged in the Petition. Paper 15 ("Institution Dec."). We therefore instituted *inter partes* review as to all challenged claims of the '109 patent and all of the asserted grounds of unpatentability. *See SAS Inst. Inc. v. Iancu*, 584 U.S. 357, 365–66 (2018); 37 C.F.R. § 42.108 (a) ("When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.").

Following institution of the trial, Patent Owner filed a Response (Paper 22, "PO Resp."), Petitioner filed a Reply (Paper 26, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 32, "PO Sur-reply"). Thereafter, petitioners Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. were terminated from the proceeding, leaving Google LLC as the sole remaining Petitioner. Paper 43.

An oral hearing with IPR2024-00810 was held on September 17, 2025. A transcript of the hearing is part of the record. Paper 49 ("Hearing Tr.").

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision issued pursuant to 35 U.S.C. § 318(a). For the reasons we discuss below, we determine that Petitioner has not proved by a preponderance of the evidence that claims 1–18 of the '109 patent are unpatentable.

II. BACKGROUND

A. Related Matters

The parties identify the following district court proceeding involving the '109 patent: *EyesMatch Ltd. v. Samsung Electronics Co., Ltd. et al.*, No. 2:23-cv-00363 (E.D. Tex.) (now settled) ("Samsung litigation"). Pet. 94–95; Paper 6, 1.

Petitioner identifies the following additional district court proceeding involving the '109 patent: *EyesMatch Ltd. et al. v. Facebook, Inc. et al.*, No. 1:21-cv-00111 (D. Del.). Pet. 94–95. Petitioner identifies the following Board proceeding involving the '109 patent: *Meta Platforms, Inc. f/k/a Facebook, Inc. et al. v. EyesMatch Ltd. et al.*, IPR2022-00489 (PTAB) (terminated). *Id.* Further, Petitioner states a petition challenging the claims in related U.S. Patent No. 8,982,110 was filed in IPR2024-00810. *Id.*

B. Real Parties-in-Interest

Petitioner identifies Google LLC as the real party-in-interest.[1] Pet. 94. Patent Owner identifies EyesMatch Ltd. as the real party-in-interest. Paper 6, 1. Neither party has challenged those identifications.

C. The '109 Patent (Ex. 1001)

The '109 patent is titled "Devices, Systems and Methods of Capturing and Displaying Appearances." Ex. 1001, code (54). The patent addresses a problem in shopping for certain consumer articles, such as clothes. *Id.* at 1:35–38. Prior to making a decision on which clothing article to buy, a customer may try on numerous articles, but have difficulty recalling their appearance with each article and have to repeatedly retry articles, resulting "in a frustrating and inefficient shopping experience." *Id.* at 1:38–60.

Accordingly, the '109 patent describes interactive imaging and display systems for retail or service environments. Ex. 1001, 1:26–29. In particular, the patent describes a system that includes an imaging device for capturing a user's appearance and a mirror-display device operating selectably as a mirror or a display. *Id.* at 5:20–23. In mirror mode, the mirror-display device allows the user to view a current user appearance, and in display mode, the mirror-display device allows the user to view one or more user appearances previously captured by the imaging device. *Id.* at 5:23–33.

[1] Petitioner states Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. Pet. 94 n.13. Petitioner asserts that XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding. *Id.*

An embodiment of the invention is shown in Figures 3A to 3C, which are reproduced below:

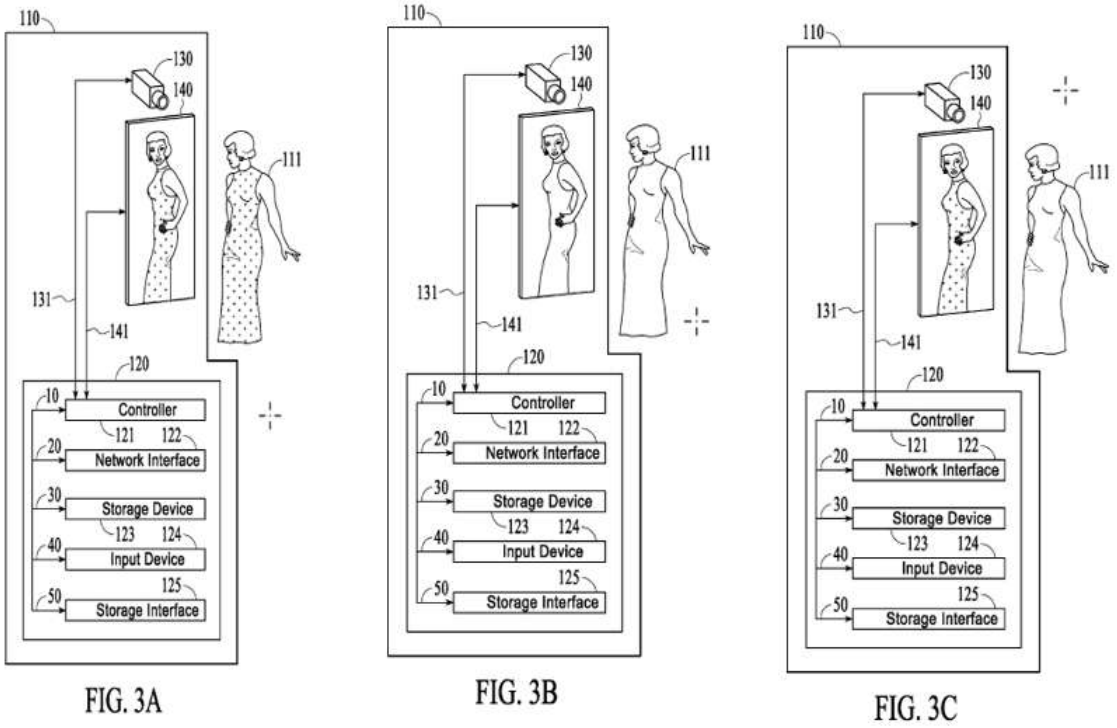


FIG. 3A FIG. 3B FIG. 3C

Figures 3A to 3C depict three sequential stages for comparing user appearances. Ex. 1001, 4:11–14. System 100 includes display station 110, control unit 120, and imaging device 130. *Id.* at 5:37–41. System 100 also includes mirror-display device 140, comprising, for example, a flat panel display. *Id.*

Figure 3A shows user 111 interacting with system 100 in which mirror-display device 140 operates in mirror mode. Ex. 1001, 12:62–64. In Figure 3A, the user is wearing a particular article of clothing in a first trial. *Id.* at 12:64–13:2. Upon receiving user input from input device 124, controller 121 may request that imaging device 130 capture an image of the user appearance, which image is stored in storage device 123. *Id.*

In Figure 3B, a user is wearing a different article of clothing in a second trial. Ex. 1001, 13:3–5. Initially, the user may view their appearance in the second trial with mirror-display device 140 in mirror mode. *Id.* With user input from input device 124, controller 121 may change mirror-display device 140 to display mode, as shown in Figure 3C, to display the image of the user appearance in the first trial. *Id.* at 13:5–12. "Therefore, by switching between operating modes of mirror-display device 140, user 111 may compare the user-appearance of the second trial with the user-appearance of the first trial and/or any other user-appearances previously stored in storage device 123." *Id.* at 13:12–16.

Figure 2B shows another embodiment and is reproduced below:

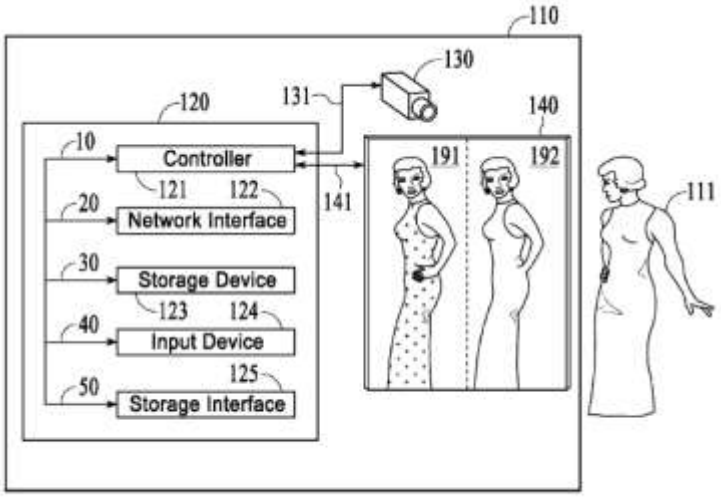


FIG. 2B

In Figure 2B, mirror-display device 140 may be "partitioned into two frames, wherein one frame may operate as a mirror frame 192 and another frame 191 may operate selectably as a mirror and as a display frame." Ex. 1001, 12:44–48. In particular, user 111 may simultaneously view a stored image of a first trial user appearance in frame 191, "side-by-side with the

normal mirror appearance of a second trial in frame 192, and compare between the first and the second trial." *Id.* at 12:51–57.

The '109 patent explains that the use of a camera and a screen are not yet accepted as a replacement for the conventional mirror. Ex. 1001, 1:61–65. These techniques are not convincing as a reliable image of the individual as if they were looking at themselves in a conventional mirror. *Id.* at 1:65–2:3. For example, when a user approaches a mirror, the user sees themselves roughly at the same size, but closer. *Id.* at 2:4–23. In contrast, when a user gets closer to a camera, the user appears larger in the image. *Id.* at 2:23–27. As another example, when a user approaches a mirror, the reflection of the user's eyes will always stay on the same virtual line into the mirror, whereas with a camera, depending on the camera's height, as the user gets closer to the camera, the user's eyes may appear at different levels. *Id.* at 2:28–33.

The '109 patent discloses, in the described embodiments, transformation mapping that corrects the image obtained by the cameras and provides an image that mimics an image that would have been reflected from a mirror. Ex. 1001, 27:3–6. Mapping essentially reassigns new addresses to each pixel of an original image. *Id.* at 29:28–30; *see also id.* at 14:40–43. The transformation mapping renders an image appearing to have been taken from a camera positioned at eye-level height and pointing horizontally. *Id.* at 29:30–32.

An embodiment of the invention comprises a "scale transformation [that] reduces the effect of size change with distance to the screen, so that the user sees almost constant size of himself in the screen, regardless of distance to the screen." Ex. 1001, 23:61–24:3. An embodiment comprises

tilt and elevation transformations and transformation mapping when using a camera on top of a screen and tilted downwards. *Id.* at 24:22–34; *see also id.* at 19:31–52 (describing accommodating distortion due to closer body parts appearing larger and further body parts appearing smaller). The patent further describes an "embodiment, [wherein] if the user moved an amount of less than, say 25 cm, the transformation mapping is performed at a lower speed, say every x seconds, while if the user moved more than 25 cm, the transformation mapping is updating the parameters at a second, faster speed." *Id.* at 27:54–58. In some embodiments an image is resized to reduce variations caused by changes in an object's distance to a camera. *Id.* at 28:49–29:6.

D. Illustrative Claim

The Petition challenges claims 1–18, of which claim 1 only is independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below:[2]

> 1. [(pre)] A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:
>
> [1(a)] obtaining a digital image from a camera;
>
> [1(b)] flipping the image about a vertical axis so as to reverse right and left sides of the image;
>
> [1(c)] *applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror*;

[2] References in brackets have been added tracking Petitioner's analysis. We have divided claim 1 into paragraphs for ease of understanding.

[1(d)] resizing the image to reduce variations caused by changes in object's distance to the camera;

[1(e)] displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;

[1(f)] wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;

[1(g)] determining distance to a user appearing in the live video feed; and,

[1(h)] *varying rate at which the non-ordered steps are performed on the series of images according to the distance*.

Ex. 1001, 30:52–67 (contested steps italicized).

E. Prior Art References and Other Evidence

Petitioner relies on the following references (Pet. 1–4):

1. U.S. Patent App. Publ. 2007/0040033 A1 (Feb. 22, 2007) (Ex. 1005, "Rosenberg");

2. Japanese Patent App. Publ. 2007-6016 A (Jan. 11, 2007) (Ex. 1006, "Nakazawa[3]");

3. Japanese Patent App. Publ. 2010-177777 A (Aug. 12, 2010) (Ex. 1008, "Hatanaka[4]");

4. U.S. Patent 6,816,187 B1 (Nov. 9, 2004) (Ex. 1010, "Iwai");

5. U.S. Patent App. Publ. 2011/0292018 A1 (Dec. 1, 2011) (Ex. 1011, "Kubota");

6. U.S. Patent App. Publ. 2008/0239107 A1 (Oct. 2, 2008) (Ex. 1012, "Cho");

7. U.S. Patent App. Publ. 2008/0253685 A1 (Oct. 16, 2008) (Ex. 1013, "Kuranov");

8. U.S. Patent App. Publ. 2007/0081208 A1 (Apr. 12, 2007) (Ex. 1014, "Chang");

[3] We cite the certified translation of Nakazawa in Exhibit 1007.

[4] We cite the certified translation of Hatanaka in Exhibit 1009.

9. U.S. Patent App. Publ. 2007/0065039 A1 (Mar. 22, 2007) (Ex. 1016, "Park");

10. International Patent App. Publ. WO 2006/108279 A1 (Oct. 19, 2006) (Ex. 1017, "Lizee"); and

11. U.S. Patent 9,355,585 B2 (May 31, 2006) (Ex. 1040, "Tripathi").

In addition to these references, Petitioner relies on a Declaration of Dr. Lina J. Karam. Ex. 1004 ("Karam Decl."). Patent Owner relies on a Declaration of Dr. David Forsyth. Ex. 2013 ("Forsyth Decl."). In addition, the parties have submitted deposition transcripts for these witnesses.[5]

F. The Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability. Pet. 2–4.

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–6, 8, 17	103(a)[6]	Rosenberg, Nakazawa
2	1–6, 8, 11, 17	103(a)	Rosenberg, Nakazawa, Hatanaka
3	1–6, 8, 17	103(a)	Rosenberg, Nakazawa, Tripathi
4	11	103(a)	Rosenberg, Nakazawa, Tripathi, Hatanaka
5	7	103(a)	Rosenberg, Nakazawa, Iwai

[5] Exhibit 1046 ("Forsyth Dep."); Exhibit 2012 ("Karam Dep.").

[6] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. §103. Because the '109 patent has a filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of §103.

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
6	7	103(a)	Rosenberg, Nakazawa, Hatanaka, Iwai
7	7	103(a)	Rosenberg, Nakazawa, Tripathi, Iwai
8	9	103(a)	Rosenberg, Nakazawa, Kubota
9	9	103(a)	Rosenberg, Nakazawa, Hatanaka, Kubota
10	9	103(a)	Rosenberg, Nakazawa, Tripathi, Kubota
11	10	103(a)	Rosenberg, Nakazawa, Cho
12	10	103(a)	Rosenberg, Nakazawa, Hatanaka, Cho
13	10	103(a)	Rosenberg, Nakazawa, Tripathi, Cho
14	12	103(a)	Rosenberg, Nakazawa, Park
15	12	103(a)	Rosenberg, Nakazawa, Hatanaka, Park
16	12	103(a)	Rosenberg, Nakazawa, Tripathi, Park
17	13–15	103(a)	Rosenberg, Nakazawa, Kuranov
18	13–15	103(a)	Rosenberg, Nakazawa, Hatanaka, Kuranov
19	13–15	103(a)	Rosenberg, Nakazawa, Tripathi, Kuranov
20	16	103(a)	Rosenberg, Nakazawa, Chang
21	16	103(a)	Rosenberg, Nakazawa, Hatanaka, Chang
22	16	103(a)	Rosenberg, Nakazawa, Tripathi, Chang
23	18	103(a)	Rosenberg, Nakazawa, Lizee

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
24	18	103(a)	Rosenberg, Nakazawa, Hatanaka, Lizee
25	18	103(a)	Rosenberg, Nakazawa, Tripathi, Lizee

III. ANALYSIS OF THE CHALLENGED CLAIMS

A. Obviousness

A claim is unpatentable as obvious under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) so-called "secondary considerations," including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Neither party has presented any evidence on the fourth *Graham* factor.

B. Level of Ordinary Skill in the Art

According to Petitioner, a person of ordinary skill in the art "as of December 18, 2012, would have a bachelor's degree in electrical or computer engineering, or a closely related field such as computer science, and two years of work experience with image capture and processing systems or related fields." Pet. 7 (citing Karam Decl. ¶¶ 65–67). Petitioner

adds that "[a] person with less and/or different education, but more relevant practical experience, or vice versa, may also meet this standard. The prior art also evidences such level of skill." *Id.*

Patent Owner states that it "applies Petitioners' proposed level of skill for purposes of this Response." PO Resp. 14 (citing Forsyth Decl. ¶¶ 62–63).

For this Decision, we adopt the formulation of the level of ordinary skill in the art proposed by Petitioner and applied by Patent Owner as consistent with the prior art before us in this proceeding.[7]

C. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2023). Under the principles set forth by the Federal Circuit, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution

[7] Dr. Forsyth testifies to a similar, but slightly more restrictive description of the person of ordinary skill, emphasizing experience with computer vision. Forsyth Decl. ¶ 62. We decline to adopt Dr. Forsyth's description as too limited in light of the prior art before us, and especially in consideration of Patent Owner's statement that it applied Petitioner's description in its Response. However, we would reach the same result with either description.

history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Prior to institution, neither party proposed specific claim constructions for our consideration. Petitioner stated that "[n]o terms require construction because the claims encompass the prior-art mappings under any reasonable construction consistent with *Phillips*." Pet. 8. Patent Owner similarly contended that while "[c]laim construction briefing of certain terms proposed by both Samsung and Patent Owners in the pending district court litigation is ongoing," "Patent Owner does not believe that resolution of any claim construction issue is necessary at this time to conclude that Petitioners have not shown that there is a reasonable likelihood that they would prevail with respect to at least one of the challenged claims." Prelim. Resp. 13. However, "Patent Owner reserve[d] the right to raise claim construction should the Board grant institution." *Id.*

We construe only those claim terms and phrases necessary to our decision. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). Accordingly, we did not construe any claim terms prior to institution. Institution Dec. 15–16.

Post-institution, however, it became clear that there were disputes over claim construction after all. We therefore provide the following claim constructions based on the submissions of the parties. To the extent further

clarification or explanation of any claim term is necessary for this Decision, we will do so in the context of our analysis of that term *infra*.

1. Mirror-mimicking

The parties are at odds over the construction of the term "applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror," appearing in claim step 1(c). The parties present highly nuanced arguments on this issue. Patent Owner contends that the Board should apply the construction proposed by Samsung and adopted by the District Court in the Samsung litigation and construe "appears to mimic a reflection of a mirror" as "an image where the user sees their reversed reflection appearing at roughly double the distance from the camera and the reflection maintains roughly the same size regardless of the user movement." PO Resp. 16–17 (citing the District Court's claim construction order, Ex. 2008, 19). Patent Owner asserts that former petitioner Samsung argued for this construction, and "the District Court effectively adopted Samsung's proposed construction." *Id.* at 14–16.[8] Patent Owner further asserts that Samsung "never told the Board that it was seeking a different construction in a parallel proceeding under the same claim construction standard." *Id.* at 17. Patent Owner contends that "it is improper for Samsung to advance a broad construction in this proceeding to invalidate the claims, and at the same time advance a narrow one in district court to support a non-infringement case." *Id.* at 18.

[8] Petitioner Google explains that while it does not adopt Samsung's positions on claim construction, "it doesn't matter" because Google's positions before us on claim construction are "consistent" with Samsung's positions in District Court. Hearing Tr. 21:5–15.

In response, Petitioner contends that the District Court's claim construction order was timely disclosed to the Board. Pet. Reply 3. Further, Petitioner contends that "Petitioners' IPR position is not inconsistent with Samsung's construction for 'mirror mimicking' in district court." *Id.* at 5. Consistent with its pre-institution position, Petitioner continues to assert that "*no construction* is needed here because the Petition/evidence shows the art discloses 'mirror mimicking' under the magistrate's construction." *Id.*

Putting aside the controversy over alleged impropriety and sandbagging in connection with the District Court's Order, which we address *infra* in connection with Patent Owner's Motion to Strike, we find the District Court's "mirror-mimicking" construction to be well-reasoned and supported by the record, and we therefore adopt that construction and its reasoning. As the District Court points out, both the "double the distance" and "same size" aspects of its construction are expressly discussed in the '109 patent. *See* Ex. 2008, 16 (citing Ex. 1001, 2:5–27, Figs. 5A, 5B). So, too, is "flipping" or reversing of the image disclosed. *Id.* at 17 (citing Ex. 1001, 14:46–51, 15:41–47).

Petitioner does not dispute that the '109 patent discloses these aspects of "mirror-mimicking," or even that the District Court's claim construction is incorrect. Instead, Petitioner contends that "[t]he Board need not construe 'mirror mimicking' [beyond plain meaning] since the prior art expressly discloses mimicking a mirror." Pet. Reply 6. Further. Petitioner characterizes the claim construction order as "a report and recommendation"

by a magistrate judge that "the district court judge has not evaluated or adopted." *Id.* at 6 n.2.[9]

We address *infra* whether the prior art "expressly" discloses "mirror-mimicking" as construed by the District Court. We, however, disagree with Petitioner that we should not construe this term. Given the controversy over whether Petitioner has argued for a different construction in the District Court, we cannot agree that an explicit construction of "mirror-mimicking" is an unnecessary step toward resolving this controversy. See *Vivid Techs., Inc.*, 200 F.3d at 803.

We therefore adopt the District Court's construction for "mirror-mimicking" requiring these three elements: (1) reversed reflection; (2) roughly double the distance; (3) roughly the same size.

2. Varying the Rate

Step 1(h) of the '109 patent recites "varying rate at which the nonordered steps are performed on the series of images according to the distance." The District Court construed this to mean "varying rate at which one or more non-ordered steps are performed on the series of images according to the distance." Ex. 2008, 28. Patent Owner urges us to adopt this construction. PO Resp. 19–20.

Similar to its previous response, Petitioner answers that "the Board need not construe this limitation to address any unpatentability questions." Pet. Reply 8–9. Petitioner continues, "[n]onetheless, the Petition/evidence

[9] Neither party points to any evidence that the Claim Construction Order by Magistrate Judge Roy S. Payne is a "report or recommendation," or that it must be "adopted" by the District Judge to be effective. The Order itself suggests otherwise: "The Court adopts the constructions set forth in this opinion for the disputed terms of the patent-in-suit." Ex. 2008, 44.

shows the prior art discloses 'varying rate' under the magistrate's construction." *Id.* at 9.

Once again, we find the District Court's construction persuasive, and we therefore adopt the District Court's construction of this term and its reasoning. *See* Ex. 2008, 25–28. More specifically, we agree with the District Court that the antecedents for "non-ordered steps" in the claim are steps 1(b) "flipping the image about a vertical axis so as to reverse right and left sides of the image," 1(c) "applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror," and 1(d) "resizing the image to reduce variations caused by changes in object's distance to the camera." Ex. 2008, 27. We further find that the "non-ordered steps" would not include step 1(a) "obtaining a digital image from a camera," as obtaining the image would have to precede these other steps, or step 1(e), "displaying the image on the monitor after performing the flipping, transformation mapping, and resizing," as the image must be processed before being displayed.

We agree also with and therefore adopt the District Court's determination that "varying the rate at which the nonordered steps are performed" can apply to any or all of "the non-ordered steps." Ex. 2008, 27. As did the District Court, we reject as contrary to the plain language of the claims and the '109 patent the proposed construction that would require varying the performance of all non-ordered steps. *Id.* at 27–28.

D. Description of the Principal Prior Art References

1. Rosenberg (Ex. 1005)

Rosenberg relates to "[a] digital mirror system . . . that emulates a traditional mirror by displaying real-time video imagery of a user who stands before it." Ex. 1005, code (57).

Figure 3 of Rosenberg is reproduced below:

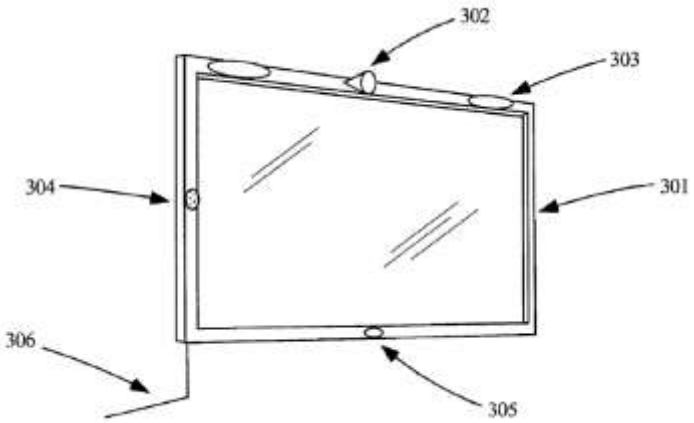


Figure 3 above illustrates wall mounted flat panel display 301 according to at least one embodiment. Ex. 1005 ¶ 62. The display includes video camera 302, light sources 303, microphones 304, proximity and/or motion sensors 305, and network connection 306. *Id.* ¶¶ 62–64, 69, 74. Processor 1305 adjusts and/or modifies images that are displayed upon a screen to achieve mirroring features and functions not provided by a standard household wall mirror. *Id.* ¶¶ 35, 109, Fig. 13.

Figure 5 of Rosenberg is reproduced below:

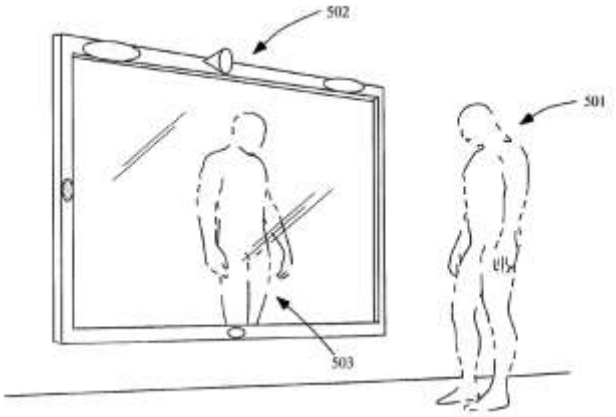


Figure 5 above illustrates a computer rendering of human user 501 standing in front of a wall-mounted embodiment of a digital mirror system 502. Ex. 1005 ¶ 77. The user's image is captured as a real-time video image by a camera, and a representation of that real-time video image is displayed on a screen of digital mirror 502 "with a displayed size and scaling such that it appears like a traditional life-size mirror image 503." *Id.* "In a traditional mirror emulation mode, the real-time video image is left-right inverted prior to display upon the screen," providing user 501 with a visual impression that he or she is standing before a traditional wall mirror. *Id.*

Rosenberg also discloses a proximity and/or motion sensor for detecting when a user is before the display screen and automatically switches operational states when the user is standing before the screen for a threshold amount of time. Ex. 1005 ¶¶ 54, 69.

2. Nakazawa (Ex. 1006, 1007)

Nakazawa relates to "a photographing device capable of correcting an image . . . when a deviation in the orientation of the face occurs when photographing." Ex. 1007, code (57).

Figure 1 of Nakazawa is reproduced below:

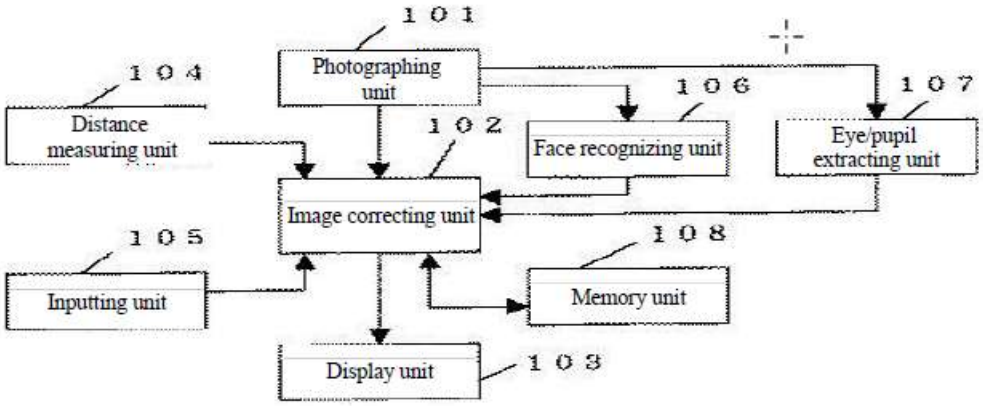
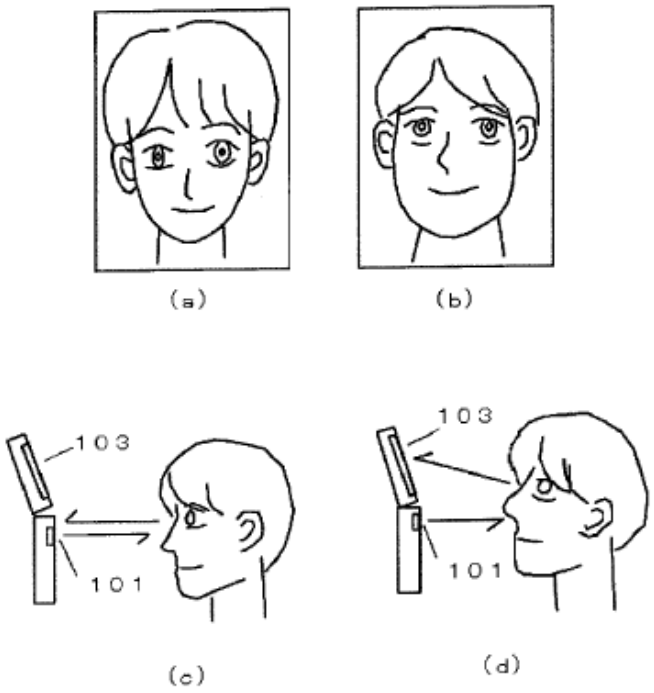


Figure 1 above is a block diagram of a photographing device in the form of a mobile phone equipped with a digital camera. Ex. 1007 ¶ 30. The photographing device includes photographing unit 101 in the form of a camera, display unit 103, image correcting unit 102 that corrects facial orientation deviation of a face image, and distance measurement unit 104 for measuring the distance between the user and the device. *Id.*

Figure 2 of Nakazawa is reproduced below:



In Figure 2(c), the user takes a picture while facing photographing unit 101, resulting in the image shown in Figure 2(a). Ex. 1007 ¶¶ 31, 32. In Figure 2(d), an image is captured while the user is looking at upper display unit 103, resulting in the image in Figure 2(b). *Id.*

Figure 3 of Nakazawa is reproduced below:

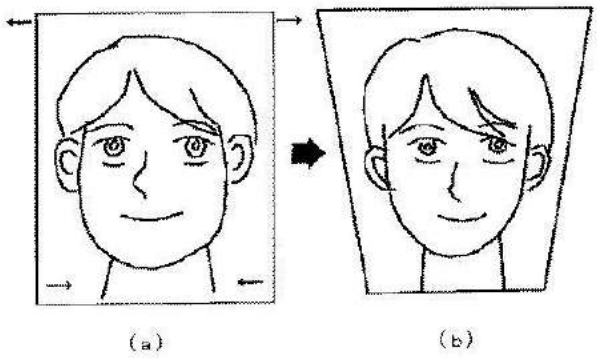


Figure 3 above illustrates correcting an image captured as depicted in Figure 2(d). Ex. 1007 ¶ 33. The image is corrected, as shown in Figure 3(a), by extending the width of the image while moving upwards from the center and narrowing the width of the image while moving downwards. *Id.* The corrected image is depicted in Figure 3(b). *Id.*

3. Hatanaka (Ex. 1008, 1009)

Hatanaka relates to an image communication system to reduce the throughput of image-data-related processing. Ex. 1009, codes (54), (57).

Figure 1 of Hatanaka is reproduced below:

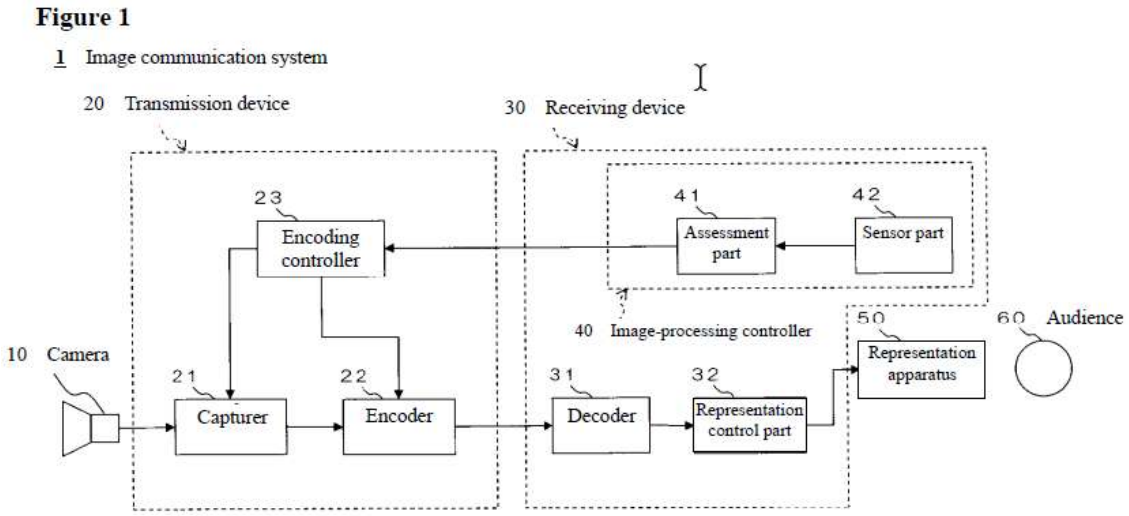


Figure 1 above illustrates camera 10 that captures video images, encoder 22, encoding controller 23, decoder 31, and representation apparatus 50, which may be a display. Ex. 1009, Fig. 1, ¶¶ 16, 18, 21. The system also includes sensor 41 that measures the distance between audience 60 and apparatus/display 50 and includes assessment part 42. *Id.* at Fig. 1,[10] ¶¶ 29, 33, 34. Assessment part 42 provides encoding controller 23 with instructions so that encoding controller 23 adjusts the frame rate and other parameters according to viewing distance D. *Id.* ¶¶ 37, 38, 39. In an embodiment, assessment part 42 and encoding controller 23 control resolution of an image encoded by capturer 21 and encoder 22 in such a way that the resolution is lowered as viewing distance D increases. *Id.*

[10] In Figure 1, reference numbers 41and 42 are reversed in comparison to the reference numbers used in the text. We use the numbers in the text as opposed to the numbers in Figure 1.

4. Tripathi (Ex. 1040)

Tripathi relates to electronic devices with adaptive frame rate displays. Ex. 1040, codes (54), (57). Control circuitry adjusts a display frame rate (sometimes referred to as the frame rate, the display refresh rate, or the refresh rate) in response to operational status information. *Id.* at 3:49–52. Control circuitry reduces the display frame rate in response to detection of, for example, static display content to be displayed. *Id.* at 1:60–2:8; *see also id.* at 5:52–57. Reducing the display frame rate may reduce power consumption for the device. *Id.* at 1:60–2:8; *see also id.* at 5:67–6:3. Control circuitry increases the display frame rate in response to detection of, for example, dynamic display content. *Id.* at 1:60–2:8; *see also id.* at 5:67–63. Increasing the display frame rate may result in a higher perceived display resolution for a user of the electric device. *Id.* at 1:60–2:8; *see also id.* at 5:65–67.

E. Obviousness of the Challenged Claims

Petitioner presents twenty-five separate challenges to claims of the '109 patent. *See supra*, Section II.F. Each of the twenty-five challenges is based at least in part on the combination of Rosenberg and Nakazawa. *Id.*

In their submissions, the parties have focused on only one claim (independent claim 1) and three challenges (Grounds 1–3). Petitioner's counsel explained, at the hearing, that its case rises or falls with Grounds 1–3:

> And as I mentioned earlier, it's very straightforward at this point in the proceeding. The Rosenberg and Nakazawa combination render the claims obvious alone or in combination with Hatanaka or in combination with Tripathi.

Hearing Tr. 7:15–16. According to Petitioner, the twenty-two additional grounds and dependent claims 2–18 "are not in dispute":

> There are additional grounds and secondary references that are added for many of the dependent claims, but those *are not in dispute*. And so, the Board, *there's nothing to resolve there*. Claim 1 is the only independent claim, *and that's the one that the parties have addressed in the briefing*, and that we plan to address today.

Id. at 7:16–21 (emphasis added).

We therefore address the three challenges and one claim addressed in the briefing and disputed by the parties.

F. Obviousness of Claim 1 Based on Rosenberg and Nakazawa (Ground 1)

In this first ground, Petitioner contends claim 1 would have obvious in view of Rosenberg and Nakazawa. Pet. 17–34. Petitioner provides an element-by-element claim analysis, supported by expert testimony. *See id.*; Karam Decl. ¶¶ 110–155.[11] Patent Owner disagrees and focuses its response on claim steps 1(c) ("applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror") and 1(h) ("varying rate at which the non-ordered steps are performed on the series of images according to the distance.") PO Resp. 20–36. Following a discussion of the other limitations as background, our analysis of claim 1 *infra* will focus on the disputed limitations.

1. Preamble and steps 1(a), 1(b) and 1(d)-1(f)

Petitioner provides its analysis of these limitations at pages 17–32 of the Petition. Petitioner principally relies on Rosenberg for the preamble and

[11] Throughout this Decision, we omit italicizing the reference names as they appear in the Karam Declaration and the Petition.

steps 1(a), 1(b), and 1(d).[12] For step 1(e) ("displaying the image on the monitor after performing the flipping, transformation mapping, and resizing"), Petitioner relies on Rosenberg and Nakazawa. Pet. 27–28. Similarly, for step 1(f) ("wherein the non-ordered steps are performed on a series of images of a live video feed from the camera,") Petitioner relies on those references in combination. *Id.* at 29–32.

Aside from its argument (addressed *infra*) that Petitioner has provided insufficient motivation to combine Rosenberg and Nakazawa (*see* PO Resp. 32–33), Patent Owner does not challenge Petitioner's analysis of these limitations.

2. Step 1(c)

For step 1(c) ("applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror"), Petitioner relies on Rosenberg and Nakazawa. Pet. 21–25. Petitioner asserts "[a person of ordinary skill] would have been motivated to use Nakazawa's transformation mapping in Rosenberg to correct the unnatural distortion in the image captured by Rosenberg's camera with a reasonable expectation of success." *Id.* at 25.

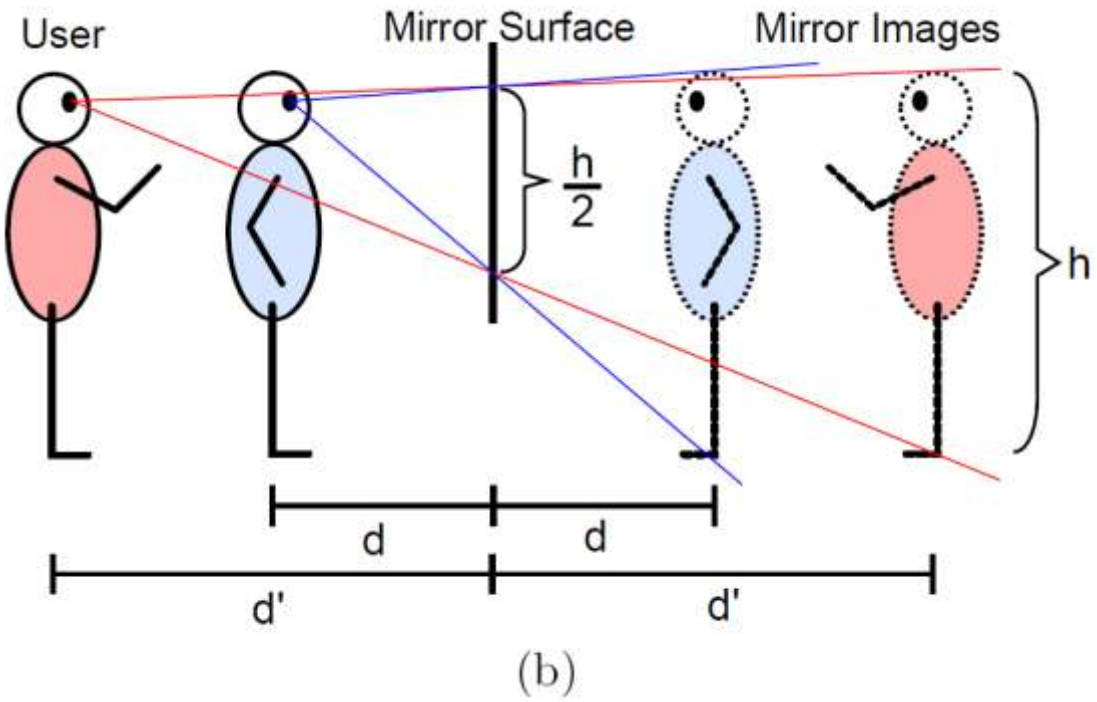
Patent Owner responds that "[n]either Rosenberg nor Nakazawa, alone or in combination, disclose limitation 1(c), . . . under the District Court's construction." PO Resp. 21. Petitioner replies that "[t]here is no dispute Rosenberg/Nakazawa discloses left/right flipping and thus discloses a 'reversed reflection' per the magistrate judge's construction." Sur-Reply

[12] For step 1(d) ("resizing the image to reduce variations caused by changes in object's distance to the camera"), Petitioner alternatively relies on Rosenberg and Nakazawa. Pet. 26.

10. We agree that this fact is not in dispute. *See* Hearing Tr. 53:18–24 ("Patent Owner's counsel explaining that Rosenberg "again and again" discloses "flipping an image."). As to the other aspects of the District Court's construction, namely the "double the distance" and "same size" features (*see supra*), Petitioner contends that "a [person of ordinary skill] would have understood that the Rosenberg/Nakazawa transformations mimicking a standard household mirror provide such well-known features." Pet Reply 10 (citing Rosenberg ¶¶ 27, 38). Dr Karam testifies that a person of ordinary skill would understand that a traditional mirror would have the characteristics of "flipping," "same size," and "double the distance." Karam Dep. 62:7–22. We agree with Petitioner and find that the record before us demonstrates that a person of ordinary skill would have recognized that these features would at least be suggested if not expressly taught by Rosenberg alone or in combination with Nakazawa. Pet. Reply 10–12. Testimony from both parties' experts support this finding. Petitioner's expert, Dr. Karam, describes the virtual "mirror effect" including "double the distance" and "same size" as "well known to a person of ordinary skill":

> A virtual mirror needs to simulate the properties of a real mirror as accurate as possible. When standing in front of a mirror at a distance *d*, the mirror image of oneself appears *exactly at the same distance but behind the mirror*. However, even though this distance can change, *the size of the user* in the mirror image when projected on the mirror surface *stays constant* at half the height h of the user.

Karam Decl. ¶ 43 (quoting Ex. 1023 (Straka), 637) (emphases added). Dr. Karam illustrates this effect in the following figure from Straka:



Karam Decl. ¶ 43 (reproducing Ex. 1023 (Straka), Fig. 1(b)); *see also* Karam Dep. 180:10–16, 253:6–25; 261:16–262:5. This figure illustrates simulating a mirror image where d and dʹ are changing distances between the user and the mirror surface and h is the height of the user. Patent Owner's expert, Dr. Forsyth, agrees, testifying that the optical properties of conventional mirrors (including the "double the distance" and "same size" features) have been known "for millennia":

> [DR. FORSYTH]: Why do I think they should have known? And what I'm referring to there is double the distance to the mirror and roughly the same size. Because those had been known for millennia and they're standard simple exercises in geometry.

Forsyth Dep. 157:7–11; *see also* Forsyth Decl. ¶¶ 68–69 (describing "general optical properties of a conventional mirror" as including "double the distance" and "same size"). We find for the reasons given (and there is

no dispute) that a person of ordinary skill would recognize that a conventional mirror has these features.

Patent Owner counters with several arguments, none of which are persuasive. *See* PO Sur-reply 10–16. For example, Patent Owner argues that "neither Rosenberg nor Nakazawa, either alone or in combination, actually discloses that the images they generate appear to be double the distance to the user, and that they maintain the same size regardless of user movement." *Id.* at 10. This argument is unavailing because it does not address Petitioner's main argument that a person of ordinary skill would have recognized that these features are at least suggested by Rosenburg's objective of providing "a traditional mirror emulation mode" in which "the digital mirror is operative to replicate the performance of a standard household mirror." Ex. 1005 ¶ 27.

Patent Owner argues there is insufficient proof of a motivation to combine Rosenberg and Nakazawa. PO Resp. 32–33. Patent Owner bases arguments on Rosenberg's disclosure of left-to-right inversion or "flipping." PO Resp. 32–33; PO Sur-reply 11–12. For example, Patent Owner contends "[t]he fact that some non-specific scaling has been performed would not teach a [person of ordinary skill] that Rosenberg has implemented a scaling approach that ensures both that the image appears at double the distance, and at the same size." PO Sur-reply, 12. Also, "[a]s Dr. Forsyth has explained, a [person of ordinary skill] would regard these discouraging statements as teaching away from implementing them and would especially be regarded as doing so given that 'traditional mirror emulation mode' only discloses image inversion." *Id.* at 17 (citing Forsyth Decl. ¶¶ 436–441).

We do not agree. Petitioner demonstrates persuasively that a person of ordinary skill would have combined these references "to reduce distortion and provide a realistic mirror image." Pet. 14–17; Haram Decl. ¶¶ 110–117. We are not persuaded by Patent Owner that by specifically disclosing "flipping" the image, Rosenberg is discouraging or teaching away from performing other transformations to achieve its objective of "replicat[ing] the performance of a standard household mirror." *See* PO Resp. 32–33 (Patent Owner asserting lack of motivation to combine the references). A reference may be said to "teach away" "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *Galderma Lab'ys, L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013). "A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed. *Id.* Further, when conducting an obviousness analysis, the Board must consider a prior art reference "not only for what it expressly teaches, but also for what it fairly suggests." *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1049 (Fed. Cir. 2019) (quoting *In re Baird*, 16 F.3d 380, 383 (Fed. Cir. 1994)). We are not convinced that the references before us "teach away" from performing the other transformations.

Patent Owner raises several procedural arguments that do not address the merits, such as its argument that Petitioner has suffered a "failure of proof." PO Resp. 23–26. We address Patent Owner's "failure of proof" and

other such arguments in connection with Patent Owner's Motion to Strike. *See infra*, Section IV.

On the merits, we find for the reasons given that Petitioner has demonstrated by a preponderance of evidence that to a person of ordinary skill, Rosenberg alone or with Nakazawa teaches or suggests step 1(c).

3. Steps 1(g) and 1(h)

These steps will be considered together. Step 1(g) provides "determining distance to a user appearing in the live video feed." Ex. 1001, 30:64–65. To meet this limitation, Petitioner cites Rosenberg's proximity sensors. Pet. 30 (citing Ex. 1005 ¶¶ 25, 32, 33, 56, 69–73, 109, 114, Fig. 13). Petitioner explains, "[w]hen the [Rosenberg] sensor detects a user within a proximity range, the system automatically engages its digital mirror functionality." *Id.* Petitioner continues, "[w]hen the sensor detects the user is no longer before the mirror for a threshold amount of time, the system automatically switches to a digital picture frame state or low power state." *Id.*

Step 1(h) recites "varying rate at which the non-ordered steps are performed on the series of images according to the distance." Ex. 1001, 30:65–67. The '109 patent discloses an embodiment in which the transformation mapping varies with distance. *Id.* at 27:54–58; *see also* the description in Section II.C. *supra*. As described in the '109 patent,

> According to one embodiment, if the user moved an amount of less than, say 25 cm, the transformation mapping is performed at a lower speed, say every x seconds, while if the user moved more than 25 cm, the transformation mapping is updating the parameters at a second, faster speed.

Id. at 27:54–58.

Petitioner contends that step 1(h) is met by Rosenberg and Nakazawa. Pet. 32–34. Petitioner contends that transformation mapping in Rosenberg-Nakazawa "can be triggered when a user is detected in front of the camera or moving towards or away from the camera." *Id.* at 33. Petitioner continues, "[a person of ordinary skill] would have understood this distance-dependent transformation mapping is 'varying [the] rate' at which this step is performed." *Id.* (quoting limitation 1(h)) (second alteration in original). Still further, Petitioner asserts, "[a]nd a [person of ordinary skill] would have understood, because determining whether to perform the transformation mapping is based on distance, the rate of performing the transformation would vary over a period of live video images as distance varies." *Id.* (citing Karam Decl. ¶¶ 150–151). Petitioner concludes that the Rosenberg-Nakazawa combination "discloses such '*varying rate*.'" *Id.*

Petitioner explains that 'Rosenberg's system automatically engages the digital mirror state if the user approaches or is in front of the display at a certain distance." Pet. 33 (citing Ex. 1005 ¶¶ 25, 32, 33, 54–56, 69–73, 109, 114, Fig. 3). Petitioner continues, "[i]f the user is not in front of the display for a certain amount of time, Rosenberg's system switches to a digital picture frame state, where the screen displays digital pictures." *Id.* at 32–33 (citing Ex. 1005 ¶¶ 54–56, 112–114; Karam Decl. ¶ 152). Further, according to Petitioner,

> [a person of ordinary skill] would have understood when Rosenberg's digital mirror switches between the digital mirroring and digital picture frame states, the rate at which Rosenberg's steps ("*the non-ordered steps*") are performed on the real-time video images ("*the series of images*") would vary. This is because Rosenberg's steps are not performed at every set time interval over a period of the real-time video images, but

> rather depending on the distance of the user to the camera/screen ("*according to the distance*").

Id. at 34 (citing Karam Decl. ¶ 155). Petitioner concludes that combining Rosenberg's teachings with Nakazawa's "transformation mapping" would have resulted in a system where "the combined steps would be performed on the real-time video images captured by Rosenberg's digital camera at a rate varying according to distance," thus meeting limitation 1(h). *Id.*

We find that Petitioner has not demonstrated by a preponderance of evidence that step 1(h) is taught or suggested by the references cited by Petitioner or the testimony of Petitioner's expert, Dr. Karam. We agree, instead, with Patent Owner's argument that "a [person of ordinary skill] would regard the disclosures in Rosenberg relating to proximity detection to be in connection with turning on or off various display modes and *not* in connection with varying the rate of one or more steps that are performed to transform a series of captured images of a user." PO Resp. 33 (citing Ex.1005, ¶¶ 25, 32, 56, 69, 114). This distinction was explored during the final hearing. Petitioner's counsel confirmed that in Rosenberg's mirror mode, the rate of performing the processing steps does not vary:

> [THE BOARD]: It's true that when the -- when Rosenberg is acting in the mirror mode, it's always at the same rate, correct? It's always performing those three processing steps at the same rate?
>
> [COUNSEL]: Correct.

Hearing Tr. 34:13–16.

We conclude that Rosenberg fails to disclose or suggest step 1(h) for the reasons given by Patent Owner and summarized above. We agree with Patent Owner's analysis that in Rosenberg, when the mirror is off the

processing steps are not performed, and when the mirror is on, the steps are performed "at an invariant rate." PO Sur-reply 18–19.

4. Dependent Claims 2–6, 8, and 17

As discussed *supra*, Patent Owner's Response does not separately address these dependent claims. "Where a party 'does not raise any arguments with respect to any other claim limitation, nor does it separately argue [the] dependent claim,' '[the] dependent claim . . . stands or falls together with [the] independent claim." *Incept LLC v. Palette Life Scis., Inc.*, 77 F.4th 1366, 1375 (Fed. Cir. 2023) (quoting *Genentech, Inc. v. Hospira, Inc.*, 946 F.3d 1333, 1340 (Fed. Cir. 2020) (alterations in original).

For the reasons given for claim 1, we determine that Petitioner has not demonstrated by a preponderance of the evidence the obviousness of claims 2–6, 8, and 17 based on Rosenberg and Nakazawa.

5. Conclusion on Claims 1–6, 8, and 17

In sum, after considering the arguments presented in the Petition and Patent Owner's responses, we determine that for the reasons given, Petitioner has failed to demonstrate that these claims would have been obvious over Rosenberg and Nakazawa.

G. Obviousness of Claims 1–6, 8, 11, and 17 Based on Rosenberg, Nakazawa, and Hatanaka (Ground 2)

As discussed *supra*, claim 1 is independent. Claims 2–6, 8, 11, and 17 depend directly or indirectly from independent claim 1.

1. Claim 1

Petitioner asserts that claim 1 would have been obvious in light of Rosenberg, Nakazawa, and Hatanaka. Pet. 46–50. Petitioner provides an element-by-element claim analysis, supported by expert testimony. *See id.*;

Karam Decl. ¶¶ 188–204. As in the case of the previous ground, Patent Owner disputes steps 1(c) and 1(h). PO Resp. 37–50.

a) Step 1(c)

For step 1(c) (along with the claim 1 preamble, steps 1(a), 1(b), and 1(d)–1(g)) Petitioner relies on its Ground 1 analysis based on Rosenberg and Nakazawa. Pet. 46. Patent Owner in turn relies on its response to Ground 1. *See* PO Resp. 37–38. For the reasons discussed in Section III.F.2, *supra*, we find these arguments by Patent Owner unpersuasive and find that step 1(c) is taught or suggested by Rosenberg and Nakazawa.

In connection with step 1(c), Patent Owner also discusses in some detail Hatanaka (despite the fact that Petitioner does not rely on Hatanaka for this step). *See* PO Resp. 38–43. We discuss Hatanaka in the following section in connection with step 1(h).

b) Step 1(h)

Petitioner contends this limitation is met by Rosenberg, Nakazawa, and Hatanaka. Pet. 47–50. Petitioner contends Hatanaka's image processing control device has a proximity sensor that measures viewing distance between the viewer and the display. *Id.* at 48–49 (citing Ex. 1009 ¶¶ 28–29, 32–36). Petitioner further contends that Hatanaka has an "assessment part" that "provides instructions to the encoding controller to reduce encoding throughput as the viewing distance increases, such as by adjusting frame rate and/or resolution." *Id.* at 49 (citing Ex. 1009 ¶¶ 8, 12, 18, 23, 37–39). Petitioner concludes "[a person of ordinary skill] would have understood reducing the frame rate and/or resolution of the video image [in Hatanaka] would reduce image data-related processing throughput because reducing resolution reduces the number of pixels in each image and

reducing frame rate reduces the number of images in a video of a fixed length." *Id.* (citing Ex. 1009 ¶ 12, Karam Decl. ¶¶ 83–85).

Patent Owner begins it Response by referring to its Ground 1 arguments that Rosenberg and Nakazawa do not meet this limitation. PO Resp. 43–48. For the reasons given in Section III.F.3, *supra*, we agree. Patent Owner contends further that "Hatanaka adds nothing to remedy this failure, and so Ground 2 fails here as well." *Id.* Patent Owner presents an analysis of differences between Hatanaka and the '109 patent, including the following:

> Hatanaka determines distance from a display apparatus . . . to a viewer of content, and can change the resolution at which video is encoded according to the distance of the viewer to the display device, or change some other parameter related to encoding video, such as "frame rate, quantization step size, compression ratio." However, Hatanaka does not disclose varying the rate at which the 109 Patent's processing *steps* to transform images for display are performed, as set out in the "flipping," "applying a transformation mapping," and "resizing" steps that follow "obtaining" an image, and precede "displaying" that image after those steps, let alone do so based on distance."

Id. at 43 (citations omitted). We agree that this analysis distinguishes Hatanaka from the '109 patent claims, specifically, step 1(h). Combining Hatanaka with Rosenberg and Nakazawa in Ground 2 does not help Petitioner's argument. *See* Pet. Reply 20–23. As Patent Owner points out, neither Rosenberg nor Nakazawa discloses varying the processing rate. *See* PO Sur-reply 20. And while Patent Owner admits that Hatanaka does disclose modifying the rate at which certain imaging steps are performed, we find that those steps relate to displaying the images (i.e., resolution and frame rate), and not varying the "rate at which the non-ordered steps are

performed on the series of images according to the distance" required by the claims. *Id.* at 20–21; Forsyth Decl. ¶¶ 480–492.

Petitioner responds that "[a]s the Rosenberg/Nakazawa system switches between these states based on user distance, the non-ordered steps transition between being performed and not performed, and as such, the rate at which these steps are performed varies." Pet. Reply 19. Dr. Karam's testimony echoes this contention. *See* Karam Decl. ¶ 151. We are not persuaded by this argument. Petitioner does not dispute that while Rosenberg is performing the "non-ordered steps" in mirror mode, the rate at which those steps are performed does not vary. *See* Hearing Tr. 34:13–16 (quoted *supra*). And in the alternative "picture frame" mode, Rosenberg's system switches off and no steps are performed. We therefore find that the "rate at which the non-ordered steps are performed on the series of images according to the distance" is not met by Rosenberg. Adding Hatanaka does not help, because reducing the frame rate or image resolution relates to displaying the images and not to the recited "non-ordered steps" in Rosenberg of flipping the image, applying a transformation mapping, and resizing the image. *See* discussion of the "ordered steps" in Section III.C.2, *supra*.

For the reasons given, we find that Petitioner fails to demonstrate by a preponderance of the evidence that step 1(h) is taught or suggested by Rosenberg, Nakazawa, and Hatanaka,

2. Dependent Claims 2–6, 8, 11, and 17

Petitioner argues in Ground 2 that these claims would have been obvious over Rosenberg, Nakazawa, and Hatanaka. Pet. 50–52. As noted above, Patent Owner's Response does not separately address these

dependent claims. Therefore, for the reasons given these dependent claims rise or fall with claim 1. *Incept LLC*, 77 F.4th at 1375.

3. Conclusion on Claims 1–6, 8, 11, and 17

For the reasons given, we determine that Petitioner has failed to demonstrate by a preponderance of the evidence that claims 1–6, 8, 11, and 17 would have been obvious over Rosenberg, Nakazawa, and Hatanaka.

H. Obviousness of Claims 1–6, 8, and 17 Based on Rosenberg, Nakazawa, and Tripathi (Ground 3)

Petitioner's analysis of this ground tracks its contentions for Ground 2, with the exception of step 1(h). *See* Pet. 53–55. In Ground 3, Petitioner relies on Rosenberg and Nakazawa for step 1(c) and Rosenberg, Nakazawa, and Tripathi (in place of Hatanaka) for step 1(h). *Id.* Specifically, for step 1(h), Petitioner contends that "Tripathi discloses adjusting the display frame rate (refresh rate) in response to content type (static/dynamic) or power supply." *Id.* at 53. Petitioner further asserts, "Tripathi discloses reducing display frame rate to reduce power consumption, and increasing display frame rate to improve display resolution and/or performance." *Id.* In response, Patent Owner repeats it arguments from Ground 1 that Rosenberg and Nakazawa do not meet step 1(c). PO Resp. 50–54. We addressed these contentions in Section II.F.2, and find for the reason given there that this step is met by those references.

As to step 1(h), Patent Owner relies on its Ground 1 analysis of Rosenberg and Nakazawa and adds that "Ground 3 fails as well, because Tripathi does not disclose varying the rate of performing image processing steps according to distance." PO Resp. 55 (citing Forsyth Decl. ¶¶ 517-525). Patent Owner explains that "Tripathi is directed to a variable frame rate display that can change the frame rate based on, inter alia, the device power

supply, type of content displayed, or user input." *Id.* at 55 (citing Ex. 1040, Abstr., 6:10–20). Patent Owner continues, "a [person of ordinary skill] would understand that this variation in frame rate is not based on the distance to a user as recited by limitation 1(h)." *Id.* (citing Forsyth Decl. ¶¶ 522–525).

Petitioner replies that "[a person of ordinary skill] would have understood that user distance affects Rosenberg/Nakazawa's real-time video image content or power state, and would have adjusted the rate of performing Rosenberg/Nakazawa's non-ordered steps according to user distance by virtue of varying the rate based on content or power state." Pet. Reply 24. For support, Patent Owner relies on the Petition (at pp. 54–55) and the testimony of Dr. Karam (Karam Decl. ¶¶ 216–219). We are not persuaded by this argument or by the supporting citations provided by Patent Owner. We find the Petition's reasoning that users would have been motivated to adjust the frame rate with distance from the display "to emulate a real mirror" to be speculative. *See* Pet. 54. As Patent Owner points out, neither Tripathi nor the other cited references discloses a varying rate, let alone a rate that varies with distance. PO Sur-reply 23–24. Similarly, we find Dr. Karam's opinions as to what Tripathi's users "would" have done to conserve power to be speculative and unsupported by any persuasive evidence. *See* Karam Decl. ¶¶ 216–218. We therefore give Dr. Karem's testimony on this particular issue minimal weight. *See* 37 C.F.R § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

For the reasons given, we determine that Petitioner has failed to demonstrate by a preponderance of the evidence that claims 1–6, 8, and 17 would have been obvious over Rosenberg, Nakazawa, and Tripathi.

I. Other Challenges

Petitioner presents twenty-two additional challenges to claims of the '109 patent. Pet. 2–4. Each of these additional challenges is based at least in part on the combination of Rosenberg and Nakazawa. *Id.* Each of the remaining challenges involves claims depending from claim 1.

The parties have chosen not to address these challenges in their post-institution briefing, and Petitioner's counsel advised us that they are "not in dispute." *See supra*, Section II.E (citing Hearing Tr. 7:16–21). Petitioner's other challenges all rely on the same Rosenberg-Nakazawa combination and suffer the same infirmities as the grounds discussed *supra*. For the reasons given, therefore, we treat these dependent claims as rising or falling with claim 1, from which they depend. *Incept LLC*, 77 F.4th at 1375.

IV. PATENT OWNER'S MOTION TO STRIKE

Patent Owner moves to strike (1) portions of Petitioner's Reply allegedly "advancing previously undisclosed theories, and arguments" and (2) "the portions of Dr. Karam's deposition relied upon by Petitioners offering new opinions and theories as to the 109 Patent." Paper 36, Motion to Strike ("Motion"), 1. For the reasons that follow, the Motion is denied.

At the outset, we point out that motions to strike are not favored and are infrequently granted. As explain in our Trial Practice Guide:

> In most cases, the Board is capable of identifying new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregarding any new issues or belatedly presented evidence that exceeds the proper scope of reply or sur-

> reply. *As such, striking the entirety or a portion of a party's brief is an exceptional remedy that the Board expects will be granted rarely.*

Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019), 80.[13]

A. Untimely New Arguments

Patent Owner contends that Petitioner "chose not to address the construction for 'it appears to mimic a reflection of a mirror' in limitation 1[c] that Petitioner Samsung advocated for (and ultimately obtained) in district court prior to Institution of this IPR." Motion 2. Further, Patent Owner argues, "[t]hroughout their Reply, Petitioners make the entirely new arguments that the Double Distance, Same Size Requirement is either disclosed by, or rendered obvious by, the Asserted Grounds." *Id.* For these reasons, Patent Owner seeks to have the portions of Petitioner's Reply addressing the "mirror mimicking" limitation (step 1(c)) "stricken in their entirety." *Id.*

Patent Owner distinguishes the Federal Circuit's decision in *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374 (Fed. Cir. 2023). Motion 4. In *Axionics*, the Federal Circuit vacated a Board decision and remanded to the Board with directions to consider reply arguments and evidence on a claim construction first advanced in a patent owner response. *Axionics*, 75 F.4th at 1383–84. According to Patent Owner, unlike in *Axionics*, "[i]n this case, the construction at issue is Petitioners' own that they *chose* not to address, despite knowing their position in the district court prior to Institution."

[13] Available at http://www.uspto.gov/TrialPracticeGuideConsolidated.

Motion 4. Patent Owner contends that by not addressing the District Court claim construction, Petitioner has suffered a "failure of proof." *Id.* at 1.

Opposing the Motion, Petitioner refers to the features of mirror-mimicking in the District Court's Claim Constriction Order (reversed reflection, double the distance, and same size). Paper 39 ("Opp."), 2 (citing Ex. 2008, 19). Petitioner asserts that "[b]oth experts agree that these are known properties of conventional mirrors." *Id.* Petitioner contends the "Karam Declaration submitted with the Petition explains how these features, which the '109 patent admits were known, are taught by Rosenberg." *Id.* (citing Karam Decl. ¶¶ 42–43).

Petitioner relies also on *Axionics*. Opp. 8. Petitioner points out that "Patent Owner is the one who now insists that the Board adopt the magistrate judge's recommended construction." *Id.* Petitioner reasons that "[t]he principles discussed in *Axonics* apply with full force to the facts here." *Id.*

We agree with Petitioner that *Axionics* favors denying Patent Owner's motion. We are not persuaded by Patent Owner's attempt to distinguish *Axionics* because Petitioner "chose" not to address the District Court's construction of "mirror mimicking." Motion 4. Petitioner was not required by our rules to assert the same claim construction before us as it advanced in District Court. *See Cambridge Mobile Telematics, Inc. v. Sfara, Inc.*, IPR2024-00052, Paper 12 at 8 (majority opinion) (PTAB Dec. 13, 2024) (informative) ("[O]ur rules do not necessarily prohibit petitioners from taking inconsistent claim construction positions before the Board and a

district court.").[14] Nor are we persuaded that Petitioner's reply arguments were not a fair response to a claim construction advanced, for the first time, in Patent Owner's Response to the Petition. Motion 4–5. In that connection, we note that prior to institution, both Petitioner and Patent Owner took the position that no claim construction was necessary. *See* Section III.C, *supra*. Not until the filing of its Response did Patent Owner urge us to adopt the District Court's claim construction. *See* PO Resp. 14–19. Allowing Petitioner to respond to this construction in its Reply is necessary under *Axionics*.

Patent Owner's other arguments are unavailing. For example, we see no impropriety in Dr. Karam's reliance on "background art" (*e.g.*, Straka). Motion 4–5.[15] Petitioner's discussion of Straka as background art is not "gap-filling," and Dr. Karam's testimony is not indicative of a "failure of proof." *Id.* at 8. The Federal Circuit recently observed that "our case law has long recognized numerous permissible uses for general background knowledge in an IPR such as, for example, furnishing a motivation to combine, or supplying a missing claim limitation." *Shockwave Med., Inc. v. Cardiovascular Sys., Inc.*, 142 F.4th 1371, 1378–79 (Fed. Cir. 2025) (internal quotation marks omitted).

[14] Dr. Karam testifies that her analysis is consistent with the District Court construction. *See, e.g.*, Karam Dep. 48:21–49:4; 51:9–52:2.

[15] Patent Owner cannot claim it was prejudiced by Petitioner's use of Straka as background art. Straka is discussed extensively in Dr. Karam's Declaration submitted with the Petition and was the subject of cross-examination by Patent Owner's counsel. *See. e.g.*, Karam Decl. ¶¶ 41–45, 52; Karam Dep. 88:1–88:21, 105:5–106:13; 107:18–109:7; 170:2–174:1.

B. Dr. Karam's Deposition

Patent Owner complains that "Petitioners rely on completely new opinions offered for the first time by Dr. Karam in her deposition that were not included in the Petition or in her Declaration." Motion 5. Consequently, "[t]he portions of Dr. Karam's testimony offering such opinions . . . should be stricken." *Id.*

This argument is without merit. As Petitioner points out, "it was Patent Owner who elicited Dr. Karam's testimony by introducing the magistrate judge's claim construction order as an exhibit and repeatedly asking her questions about it." Opp. 9; *see, e.g.*, Karam Dep. 45:8–52:20, 187:25–193:22. We agree that Patent Owner opened the door to this testimony by cross-examining Dr. Karam on the District Court's Order. We agree, also, that Patent Owner has failed to identify specific testimony that should be stricken. Opp. 10. Our Trial Practice Guide warns against this approach: "[S]triking the entirety or a portion of a party's brief is an exceptional remedy that the Board expects will be granted rarely." Trial Practice Guide, 80.

C. Summary and Conclusion

For the reasons given, Patent Owner has failed to demonstrate that the "exceptional remedy" of striking portions of Petitioner's Reply and Dr. Karam's cross-examination testimony is warranted. Patent Owner's Motion to Strike is denied.

V. CONCLUSION

For the foregoing reasons, we have determined Petitioner has not proved by a preponderance of the evidence that claims 1–18 of the '109 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–6, 8, 17	103(a)	Rosenberg, Nakazawa		1–6, 8, 17
1–6, 8, 11, 17	103(a)	Rosenberg, Nakazawa, Hatanaka		1–6, 8, 11, 17
1–6, 8, 17	103(a)	Rosenberg, Nakazawa, Tripathi		1–6, 8, 17
11	103(a)	Rosenberg, Nakazawa, Tripathi, Hatanaka		11
7	103(a)	Rosenberg, Nakazawa, Iwai		7
7	103(a)	Rosenberg, Nakazawa, Hatanaka, Iwai		7
7	103(a)	Rosenberg, Nakazawa, Tripathi, Iwai		7
9	103(a)	Rosenberg, Nakazawa, Kubota		9
9	103(a)	Rosenberg, Nakazawa, Hatanaka, Kubota		9
9	103(a)	Rosenberg, Nakazawa, Tripathi, Kubota		9
10	103(a)	Rosenberg, Nakazawa, Cho		10
10	103(a)	Rosenberg, Nakazawa, Hatanaka, Cho		10
10	103(a)	Rosenberg, Nakazawa, Tripathi, Cho		10

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
12	103(a)	Rosenberg, Nakazawa, Park		12
12	103(a)	Rosenberg, Nakazawa, Hatanaka, Park		12
12	103(a)	Rosenberg, Nakazawa, Tripathi, Park		12
13–15	103(a)	Rosenberg, Nakazawa, Kuranov		13–15
13–15	103(a)	Rosenberg, Nakazawa, Hatanaka, Kuranov		13–15
13–15	103(a)	Rosenberg, Nakazawa, Tripathi, Kuranov		13–15
16	103(a)	Rosenberg, Nakazawa, Chang		16
16	103(a)	Rosenberg, Nakazawa, Hatanaka, Chang		16
16	103(a)	Rosenberg, Nakazawa, Tripathi, Chang		16
18	103(a)	Rosenberg, Nakazawa, Lizee		18
18	103(a)	Rosenberg, Nakazawa, Hatanaka, Lizee		18
18	103(a)	Rosenberg, Nakazawa, Tripathi, Lizee		18
Overall Outcome				1–18

VI. ORDER

For the foregoing reasons, it is:

ORDERED that that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–18 of the '109 patent are unpatentable;

FURTHER ORDERED that because this is a Final Written Decision, 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.[16]

[16] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

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