

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC, SAMSUNG ELECTRONICS CO. LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioners

v.

EYESMATCH LTD.,
Patent Owner

Case No. IPR2024-00856
U.S. Patent No. 8,982,109

**PATENT OWNER EYESMATCH LTD.'S RESPONSE TO PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 8,982,109**

TABLE OF CONTENTS

I. INTRODUCTION 1

II. BACKGROUND 1

 A. THE 109 PATENT 1

 B. OVERVIEW OF THE REFERENCES 4

 1. Rosenberg 4

 2. Nakazawa 5

 3. Hatanaka 6

 4. Tripathi 7

 5. Iwai 8

 6. Kubota 9

 7. Cho 10

 8. Kuranov 10

 9. Chang 12

 10. Park 12

 11. Lizee 13

III. PERSON HAVING ORDINARY SKILL IN THE ART (“POSITA”) 14

IV. CLAIM CONSTRUCTION 14

 A. “applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror” 15

 B. “varying the rate at which the non-ordered steps are performed on the series of images according to the distance” 19

V. PETITIONERS HAVE FAILED TO SHOW THAT ANY INSTITUTED GROUNDS RENDER the CLAIMS OF THE 109 PATENT UNPATENTABLE 20

A.	Ground 1: Petitioners Fail to Show Unpatentability of Claims 1-6, 8, and 17 in View of Rosenberg and Nakazawa	20
1.	Neither Rosenberg Nor Nakazawa Discloses Limitation 1(c)	21
2.	Petitioners Fail to Show Motivation to Combine Rosenberg and Nakazawa for Limitation 1(c).....	32
3.	Neither Rosenberg Nor Nakazawa, Alone Or In Combination, Disclose Limitation 1(h).....	33
4.	Petitioners Fail to Show Motivation to Combine Rosenberg and Nakazawa for Limitation 1(h)	35
B.	Ground 2: Petitioners Fail to Show Unpatentability of Claims 1-6, 8, 11, and 17 in View of Rosenberg, Nakazawa, and Hatanaka	37
1.	Hatanaka, Alone Or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(c).....	37
2.	Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Hatanaka for Limitation 1(c).....	41
3.	Hatanaka, Alone or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(h).....	43
4.	Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Hatanaka for Limitation 1(h)	48
C.	Ground 3: Petitioners Fail to Show Unpatentability of Claims 1-6, 8, and 17 in View of Rosenberg, Nakazawa, and Tripathi	50
1.	Tripathi Alone Or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(c).....	50
2.	Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Tripathi for Limitation 1(c).....	52
3.	Tripathi, Alone Or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(h).....	55
4.	Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Tripathi for Limitation 1(h).....	56

D. Grounds 4-25: Petitioners Fail To Show Unpatentability Of The
Dependent Claims.....59

VI. CONCLUSION 60

TABLE OF AUTHORITIES

Cases

Google LLC v. Virentem Ventures, LLC,
No. IPR2019-01247, Paper 34 (P.T.A.B. Mar. 5, 2021) 18

In re Dembiczak,
175 F.3d 994 (Fed. Cir. 1999) 33, 35, 48, 56

In re Gartside,
203 F.3d 1305 (Fed. Cir. 2000) 33, 35, 48, 56

Kiosoft Techs., LLC v. PayRange, Inc.,
No. IPR2021-00086, Paper 12 (P.T.A.B. Mar. 22, 2021) 18

OrthoPediatrics Corp. v. K2M, Inc.,
No. IPR2018-01548, Paper 9 (P.T.A.B. Mar. 1, 2019) 18

Source Search Techs., LLC v. Lending Tree, LLC,
588 F.3d 1063 (Fed. Cir. 2009) 18

Other Authorities

Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019)... 17

Regulations

37 C.F.R. §42.100 (b)..... 17

83 Fed. Reg. 51340 18

List of Patent Owner's Exhibits

Ex.No.	Description
2001	Declaration of Matthew D. Powers in Support of Patent Owner's Unopposed Motion for <i>Pro Hac Vice</i> Admission
2002	Declaration of William P. Nelson in Support of Patent Owner's Unopposed Motion for <i>Pro Hac Vice</i> Admission
2003	Declaration of Natasha M. Saputo in Support of Patent Owner's Unopposed Motion for <i>Pro Hac Vice</i> Admission
2004	Docket Navigator, E.D. Texas Time to Trial (Jan. 1, 2019-Aug. 13, 2024)
2005	Defendants' Invalidity Contentions and P.R. 3-3 and 3-4 Disclosures, and Exhibits A-00 through B-29; E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2006	Defendants' Unopposed Motion for Leave to Supplement Invalidity Contentions to Add Three Related Prior Art References, [Proposed] Order, and Exhibits 1-7; E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2007	Order Granting Motion for Leave to Supplement Invalidity Contentions to Add Three Related Prior Art References; E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2008	Claim Construction Order; E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2009	Samsung Responsive Claim Construction Brief (Dkt. No. 47); E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2010	Declaration of Harley R. Myler, Ph.D. Regarding Claim Construction (Dkt. No. 47-2), E.D. Texas Case No. 2:23-cv-00363- JRG-RSP
2011	Markman Hearing Transcript (December 6, 2024); E.D. Texas Case No. 2:23-cv-00363-JRG-RSP
2012	Deposition of Dr. Lina J. Karam (February 26, 2025)
2013	Declaration of Dr. David Forsyth in Support of Patent Owner EyesMatch Ltd.'s Response to Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,982,109

I. INTRODUCTION

All of Petitioners' grounds fail to establish unpatentability of the challenged claims of the 109 Patent. Among other reasons, this is because, *at the same time* the Board was considering whether to institute this proceeding based on a Petition that urged a plain meaning construction for the claims, Petitioner was seeking from the district court, and ultimately obtained, a far narrower construction for certain limitations of Claim 1 that its Petition does not even attempt to show were disclosed in its asserted Grounds here. Because none of Petitioners' references disclose, either alone or in combination, all the required limitations of independent Claim 1, under the narrow construction Samsung obtained but did not tell the Board about, all of Samsung's asserted Grounds must fail.

II. BACKGROUND

A. THE 109 PATENT

On March 17, 2015, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,982,109 (the "109 Patent"), entitled "Devices, Systems and Methods of Capturing and Displaying Appearances," to Nissi Vilcovksy and Ofer Saban. EyesMatch Ltd. is the owner of the remaining right, title, and interest in and to the 109 Patent, with the exclusive right to enforce the 109 Patent.

The field of endeavor of the 109 Patent is digital mirror systems that emulate traditional mirrors. As the 109 Patent explains, a traditional video camera is a poor

substitute for a mirror: while “[a] few alternatives have been proposed by prior art around the combination of a camera and a screen to replace the conventional mirror,” it explains that “these techniques are not convincing and are not yet accepted as a reliable image of the individual as if he was looking at himself in a conventional mirror,” primarily “because the image generated by a camera is very different from an image generated by a mirror.” Ex.1001 (109 Patent) at 1:61-2:3. For example, “When a user looks at himself in the mirror, what he actually sees is the reflection of himself as if he was standing at a distance that is double the distance from him to the mirror” (Ex.1001 (109 Patent) at 2:4-6) but with a camera, “wherein as the user gets closer to the camera he appears larger in the image. This is mainly because the FOV of a camera is fixed and is determined mainly by the size of the camera lens, or focal length.” Ex.1001 (109 Patent) at 2:23-27. Similarly, “when the user approaches the mirror, the reflection of his eyes will always stay on the same virtual line into the mirror. Conversely, depending on a camera’s height, as the user gets closer to the camera, the user’s eyes may appear at different levels.” Ex.1001 (109 Patent) at 2:29-33. *See* Ex.2013, ¶¶67-74.

The 109 Patent describes a solution to these problems by implementing a series of software transformations of the received image that cause a camera and conventional computer to mimic a mirror with a captured video stream. First, the image is flipped. *See, e.g.*, Claim 1. Then, a “transformation mapping” is applied to

modify the image to mimic a mirror image; the 109 Patent specification explains that such “transformation mappings” can include an algorithm that moves the image of the subject in the frame so as to keep their eyes consistently at the same level of the frame, as would occur with a mirror. Ex.1001 (109 Patent) at 19:31-52, Claim 1. The image is then resized to reduce variations based on changes in the object’s distance; for example, this can cause the camera/computer to display the subject at a consistent size when they approach or move away from the camera, as a mirror does, instead of increasing in size to the point at which they take up the entire frame. *See, e.g.,* Ex.1001 (109 Patent) at Claim 1. Finally, the system applies at least one of these transformations at a rate that varies according to the distance to the user in order to smoothly mimic a mirror. *See, e.g.,* Ex.1001 (109 Patent) at Claim 1. *See* Ex.2013, ¶¶64-66.

Independent Claim 1 claims a method for operating a system with a monitor, camera, and processor to display a mirror-mimicking image on the monitor by performing non-ordered steps comprising: (i) obtaining a digital image from a camera; (ii) flipping the image about a vertical axis to reverse the right and left sides of the image; (iii) applying a transformation mapping to the image to modify it such that it appears to mimic a reflection of a mirror; (iv) resizing the image to reduce variations caused by changes in the object’s distance to the camera; and (v) displaying the image on the monitor after performing the flipping, transformation

mapping, and resizing; (vi) the non-ordered steps are performed on a series of images of a live video feed from the camera; (vii) determining the distance to a user appearing in the live video feed; and (viii) varying the rate at which the non-ordered steps are performed on the series of images according to the distance. Claims 2-18 of the 109 Patent, either directly or through claim dependency, must meet Claim 1.

B. OVERVIEW OF THE REFERENCES

1. Rosenberg

Rosenberg discloses a “digital mirror system” which “emulates a traditional mirror by displaying real-time video imagery of a user who stands before it.” Ex.1005 at Abstract. Rosenberg’s mirror system is also “adapted to provide real-time captured images that approximate what a user would see when viewing an ordinary mirror, with the addition of various other image processing features.” Ex.1005, ¶¶0006, 0050, 0075, 0077. *See id.*, ¶0028. Ex.2013, ¶75. However, in Rosenberg’s technique of mirror emulation, the user’s image is not transformed other than being inverted. *See* Ex.1005, ¶0026 (explaining that in Rosenberg’s “traditional mirror mode,” images are “a left-right inverted representation of the video signal captured by the camera.”). *See id.*, ¶¶0027, 0036, 0039, 0041. Ex.2013, ¶¶ 438-440. Rosenberg fails to recognize that just inverting the image is insufficient to create a convincing mirror emulation. Also, Rosenberg considers that a “raised vantage point is sometimes advantageous, giving users an increased view of the top

of their head”, and fails to recognize that placing the camera above the screen introduces distortions, making mirror emulation even less convincing. *Id.* at [0027]. The magnification or zoom feature disclosed in Rosenberg is not resizing of the image to reduce variations caused by changes in the object’s distance to the camera as recited by claims of the 109 Patent but is only performed at the affirmative direction of a user. Ex.1005, ¶¶0026, 0050-0052. Ex. 2013, ¶435. Similarly, Rosenberg’s disclosure of proximity detection is in connection with turning on or off various modes of the display. Ex.1005, ¶0056. Ex.2013, ¶¶455-456. As discussed below for Ground 1, Rosenberg does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Rosenberg with any of the references in Grounds 4-25 to meet limitations 1(c) or 1(h).

2. Nakazawa

Nakazawa is directed to gaze correction in photography: “a photographing device that is capable of image correction so that the line of sight of the captured image and the displayed image are aligned”. Ex.1007, ¶0007. Ex.2013, ¶76. Nakazawa is not directed to replicating a mirror-like experience for the user. At most, a POSITA may consider Nakazawa as disclosing simple inversion of the image. Ex.2013, ¶444. Nakazawa is silent as to more advanced mirror mimicking techniques such as ensuring the user’s image appears at roughly double the distance to the camera. Ex.2013, ¶445. None of the corrections to the user’s image disclosed

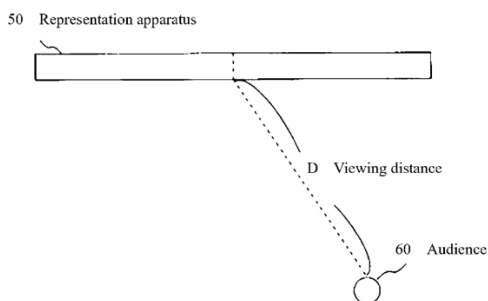
in Nakazawa are directed to modifying the image such that it appears to mimic a reflection of a mirror as recited by claims of the 109 Patent. Nakazawa discloses a “correcting means for correcting an orientation deviation of the face” based on magnification and reduction ratios depending on the distance of the user from the photographing means (*see, e.g.*, Ex.1007, ¶¶0008-0009, 0015, 0025) and discloses correction of the orientation of the user’s pupils to generate “a face image in which the line of sight is oriented toward the photographing means” (Ex.1007, ¶0028). Ex.2013, ¶76.

As discussed below for Ground 1, Nakazawa does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Nakazawa with any of the references in Grounds 4-25 to meet limitations 1(c) or 1(h).

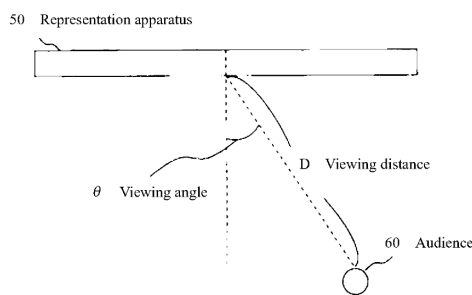
3. Hatanaka

Hatanaka is directed to the reduction of throughput for image data processing in a communication system. Ex.1009, Abstract, ¶0012. Ex.2013, ¶77. Hatanaka is not directed to replicating a mirror-like experience for the user and discloses no techniques to do so. Hatanaka discloses use of determining the “viewing distance D” which is “the distance between representation apparatus 50 and audience 60” and/or viewing angle Θ to determine the appropriate amount of encoding for image data. Ex.1009, ¶¶0029, 0039, 0049, 0059, 0068-0069, 0083-0085. Any variance in encoding parameters disclosed in Hatanaka is not to reduce variations caused by

changes in the object's distance to the camera as recited by claims of the 109 Patent, but on the display size (Ex.1009, ¶0027) and distance between the audience and “representation apparatus 50” (Ex.1009, ¶0029). There is no disclosure of determining distance to a user appearing in the video feed as recited by claims of the 109 Patent. Ex. 2013, ¶¶484, 487.



[Ex.1009, Fig. 2(b)]



[Ex.1009, Fig. 5(b)]

As discussed below for Ground 2, Hatanaka does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Hatanaka with any of the references in Grounds 4-25 to meet limitations 1(c) or 1(h).

4. Tripathi

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. Ex.1040, Abstract, 1:60-62, 2:1-3, 6:10-20 10:40-44. Ex.2013, ¶78. For example, if static display content is detected, the display can decrease the frame rate and thereby “reduce power consumption for the device”. Ex.1040 at 1:60-67. If dynamic display content is detected, the frame rate can be increased to “result in a

higher perceived display resolution for a user of the electric device.” Ex.1040 at 2:1-8; *see also* 5:65-6:3.

Tripathi is not directed to replicating a mirror-like experience for the user and discloses no techniques to do so. Ex.2013, ¶¶83-85. Any resizing of the displayed content is done based on affirmative inputs from a user (*see, e.g.*, Ex.1040 at 10:40-50) and not to reduce variations based on changes in the object’s distance to the camera as recited by claims of the 109 Patent. Similarly, Tripathi includes a disclosure for varying the frame rate based on affirmative user inputs (*see, e.g.*, Ex.1040, 10:40-50, Fig. 13, 11:11-24, Fig. 15, 12:54-67), but this variation in frame rate is not varied according to distance to a user as recited by claims of the 109 Patent. Ex.2013, ¶89.

As discussed below for Ground 2, Tripathi does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Tripathi with any of the references in Grounds 4-25 to meet limitations 1(c) or 1(h). *See* Ex.2013, ¶¶78-91.

5. Iwai

Iwai is directed to calibration of a digital camera based on registration between a base image and a picked-up image. Ex.1010, Abstract, 7:11-21, 8:23-34. Ex.2013, ¶92. For example, Iwai discloses that a calibration pattern with a geometrical configuration known in advance is photographed – this is the base image. Ex.1010

at 12:5-10. The picked-up image is a photograph of the base image. *See, e.g.*, Ex.1010 at 5:5-9, 6:5-9. A calculation of a distortion parameter is made using the base image and the picked-up image. *See, e.g.*, Ex.1010 at 12:26-28. There is no suggestion in Iwai about the applicability of this reference image method outside of the context of digital camera calibration. Iwai is not directed to replicating a mirror-like experience for a user, and Iwai discloses no techniques to do so.

As Dr. Forsyth explains, Iwai does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Iwai with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶92-134.

6. Kubota

Kubota is directed to providing “a liquid crystal display device capable of optimally setting the backlight control according to the viewing environment and the image display mode.” Ex.1011, ¶0011; *see also* ¶0014. Kubota discloses light control areas with illumination controlled according to pre-set modes selected by the user, e.g., “in-store demonstration”, “power reduction”, or “high image quality”. Ex.1011, ¶0044; *see also*, Ex.1011, Figs. 4-5, ¶¶0053-0055, 0067. Kubota discloses no techniques to replicate a mirror-like experience for the user.

As Dr. Forsyth explains, Kubota does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Kubota with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶135-182.

7. Cho

Cho is directed to a digital camera with distortion correction based on a focal length to correct wide-angle or optical distortion with coordinate transform processing using an appropriate coefficient from a coefficient table. *See, e.g.*, Ex.1012, Abstract, ¶¶0017, 0059, 0063, 0111-0112. Cho discloses no techniques to replicate a mirror-like experience for the user as recited by claims of the 109 Patent.

Instead, Cho uses focal length to determine image transformations. [*See, e.g.*, Ex.1012, Abstract, ¶¶0059, 0063-0064, 0078, 0081-0082, 0102, 0105, 0111-0013, 0147, Figs. 8, 10-11, 13, 15, 17-19]. Focal length determines the lens' field of view – the shorter the focal length the wider the view and the longer the focal length the narrower the view. Focal length is not a determination of distance to a user appearing in the live video feed as recited by claims of the 109 Patent.

As Dr. Forsyth explains, Cho does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Cho with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶183-230.

8. Kuranov

Kuranov is directed to constructing a “panorama” by “joining and stitching multiple images or videos taken from different locations or angles and viewpoints.” Ex.1013, ¶0005. Kuranov discloses “both automatic and manual methods of stitching and/or joining images” and discloses “adjusting features, and blending and

smoothing of images that have been combined.” Ex.1013, ¶0005; *see also* Ex.1013, ¶¶0043-0044, 0057-0060, 0066-0068, Figs. 2A, 2B, 6. Kuranov is not directed to replicating a mirror-like experience for the user and discloses no techniques to do so. None of the corrections to the panoramic image disclosed in Kuranov are directed to modifying the image such that it appears to mimic a reflection of a mirror as recited by claims of the 109 Patent.

Kuranov discloses resizing or zooming of the panoramic image only for better display (Ex, 1013, ¶¶0045, 0049) and not to account for variations in the object’s distance to the camera as recited by claims of the 109 Patent. Kuranov’s disclosure that “Some images may be moved forwards or backwards to compensate for the differences among the cameras in distances from the cameras to the objects of interest” (Ex.1013, ¶0094) discloses neither resizing to reduce variations based on changes in the object’s distance to the camera nor discloses determining distance to a user as recited by claims of the 109 Patent.

As Dr. Forsyth explains, Kuranov does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Kuranov with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶281-327.

9. Chang

Chang is directed to the use of multiple cameras to create a display system capable of generating 3D images as well as 2D images. Ex.1014, Abstract, ¶¶0003, 0013-0015, 0087, 0099.

Chang discloses using several direction parallax image signals. Ex.1014, Abstract, ¶¶0018, 0024-0025; *see also*, e.g., Ex.1014, Figs. 3A-3B, 4A-4B, 5. Parallax image signals are not mirrored or inverted. Chang is not directed to replicating a mirror-like experience for the user, and discloses no techniques to do so.

As Dr. Forsyth explains, Chang does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Chang with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶328-372.

10. Park

Park is directed to an image capturing apparatus and image capturing method to compensate for 3D distortion which occurs when the user's image is captured while looking down towards a camera, such as a phone camera, based on the determined tilt of the device capturing the image. Ex.1016, ¶¶0009, 0010, 0047-0048.

Park discloses neither resizing to reduce variations based on changes in the object's distance to the camera nor discloses determining distance to a user as recited by claims of the 109 Patent.

As Dr. Forsyth explains, Park does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Park with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶231-280.

11. Lizze

Lizze is directed to a virtual presence system. Ex.1017, Abstract. Lizze discloses an image capture device to capture a user's image "from which a virtual representation of the user may be generated and displayed" "by applying a mirrored silhouette transformation to the user image". Ex.1017, Abstract, ¶¶0012, 0014. Both the orientation of the user and directions of the user in the real world "are substantially the same in the virtual environment". Ex.1017, ¶0035. This means that the virtual camera is positioned behind the user: "The system 10 thus provides the user with the illusion that his/her silhouette has been captured from behind and projected inside the virtual environment 22 and, through this silhouette image 20, he/she can interact in the virtual environment 22 in a natural way." Ex.1017, ¶0071. Lizze does not apply a transformation mapping to the captured image such that it appears to mimic a reflection of a mirror as recited by claims of the 109 Patent. Rather, Lizze uses the captured image to create a silhouette of the user, and the image

displayed is that of a virtual representation, seen from behind. *See, e.g.*, Ex.1017, ¶0012.

Lizee does not disclose determining distance to a user as recited by claims of the 109 Patent. Rather, Lizee’s determination of distance relies on pixels and inverse proportionality and is based on pixels of the virtual image rather than the user’s captured image that is used as a silhouette. Ex.1017, ¶¶0043-0045.

As Dr. Forsyth explains, Lizee does not disclose either limitations 1(c) or 1(h) and a POSITA would not be motivated to combine Lizee with any of the references in Grounds 1-3 to meet limitations 1(c) or 1(h). Ex.2013, ¶¶373-429.

III. PERSON HAVING ORDINARY SKILL IN THE ART (“POSITA”)

Petitioners propose a POSITA “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. A person with less and/or different education, but more relevant practical experience, or vice versa, may also meet this standard.” Paper 1 at 7 (“Pet.”). Patent Owner applies Petitioners’ proposed level of skill for purposes of this Response. Ex.2013, ¶¶62-63.

IV. CLAIM CONSTRUCTION

Petitioner Samsung is a defendant in a district court litigation involving the 109 Patent, *EyesMatch Ltd. v. Samsung Electronics Co., Ltd., et al.*, No. 2:23-cv-

363 (E.D. Tex.) (“the District Court Litigation”). On September 13, 2024, nearly three months before the Board instituted this proceeding based on Samsung’s Petition which contended that “[n]o terms require construction” (Pet. at 8), Samsung submitted an expert declaration and briefing seeking narrow, non-plain meaning constructions of certain limitations of the same claims to the district court. *See, e.g.*, Ex.2010 (Myler declaration), ¶¶ 58-65 (concerning “it appears to mimic a reflection of a mirror”). On December 11, 2024, one week after the Board’s institution decision, the District Court issued a claim construction order construing certain terms narrowly, as described below. Ex.2013, ¶25.

A. “applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror”

Limitation 1(c) of the 109 Patent requires “applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror.” In the District Court Litigation, Petitioner Samsung argued for a construction of “it appears to mimic a reflection of a mirror” that would require “[a]n image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of user movement.” Ex.2009 (Samsung Responsive Claim Construction Brief (Dkt. No. 47)) at 12. Samsung argued that because the 109 and 110 Patents aim to create a convincing mirror experience “mimicking a mirror’s reflection requires more than simply displaying a reversed image/video of a user”

(Ex.2009 at 13 (emphasis in original)). Samsung relied on disclosures in the 109 Patent described a conventional mirror as generating a reflection of a user “as if he was standing at a distance that is double the distance from him to the mirror” and “roughly at the same size” regardless of distance to the mirror. Ex.2009 at 13-14. Petitioner Samsung also submitted an expert declaration in support of this position. Ex.2010, ¶¶58-65. Samsung’s expert opined that a POSITA reading the disclosures in the 109 Patent describing a conventional mirror would understand “it appears to mimic a reflection of a mirror” to require not only a right-left flip of the user’s image (Ex.2010, ¶60) but also that the image appear at double the distance from the camera (Ex.2010, ¶61), and that the image appear always roughly the same size regardless of how close or far the user is from the camera (Ex.2010, ¶¶62-64). During the claim construction hearing, the District Court noted that the 109 Patent’s description of the general optical mechanics of a conventional mirror were not “intuitive” specifically: “The fact that it [a user’s reflection] appears double the distance or that it maintains the same size, those are things I think the specification is describing that most people don’t know.” Ex.2011 at 39:15-20. Consequently, the District Court effectively adopted Samsung’s proposed construction for “it appears to mimic a reflection of a mirror” verbatim, construing the term 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.”
Ex.2008 at 19. Ex.2013, ¶¶26-27.

In its Petition, Samsung did not contend that “appears to mimic a mirror” should be given the narrow construction it obtained from the district court, and during the Board’s consideration of the Petition, never told the Board that it was seeking a different construction in a parallel proceeding under the same claim construction standard. 37 C.F.R. §42.100 (b). In fact, Petitioners objected to EyesMatch’s efforts to promptly bring the district court’s claim construction order with this narrow construction to the attention of the Board, as required by the PTAB’s Consolidated Trial Practice Guide (Nov. 2019), which states, at page 47: “Parties should submit a prior claim construction determination by a federal court or the ITC in an AIA proceeding as soon as that determination becomes available.” Paper 19 at 2. As discussed below, Samsung’s Petition and its supporting expert declaration (Pet., Ex.1004) do not apply the claim construction it sought and obtained from the district court, or otherwise demonstrate how a POSITA would understand its proposed Grounds of unpatentability would achieve the claimed invention of Claim 1 and its dependent claims under that construction. Nor did Petitioners inform the Board that it had proposed a narrow construction of this limitation to the district court during the pendency of its Petition – a position it took almost three months prior to the institution decision.

Fundamental fairness, and the black-letter principles of claim construction, validity, and infringement, dictate 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. “[I]t is axiomatic that claims are construed the same way for both invalidity and infringement.” *Source Search Techs., LLC v. Lending Tree, LLC*, 588 F.3d 1063, 1075 (Fed. Cir. 2009). Failing to apply a consistent claim construction between these parallel proceedings – which now apply the same claim construction standard – would undermine the “predictability” of a patent’s claim scope, as well as the “integrity of the patent system’ overall.” *Kiosoft Techs., LLC v. PayRange, Inc.*, No. IPR2021-00086, Paper 12 at 16 (P.T.A.B. Mar. 22, 2021) (petitioner and its expert advocated for different constructions at the district court and the PTAB). *See also* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51340 at 51345 (“By maintaining consistency among the various proceedings, the integrity, predictability and reliability of the patent system is thus enhanced.”); *Google LLC v. Virentem Ventures, LLC*, No. IPR2019-01247, Paper 34 at 11 (P.T.A.B. Mar. 5, 2021) (rejecting patent owner’s proposed construction in part because it would result in “construing the claims in a manner inconsistent with the District Court”); *OrthoPediatrics Corp. v. K2M, Inc.*, No. IPR2018-01548, Paper 9 at 11 (P.T.A.B. Mar. 1, 2019)(finding “it is incumbent

upon Petitioner to address substantively the District Court’s claim construction of a limitation when construction of that limitation is likely to be a focal point of the *inter partes* review proceeding,” and that by “failing to reconcile its proffered claim construction here with its very different construction proffered in District Court—which the District Court agreed with—Petitioner fails to satisfy” its burden in its Petition.)

Having now obtained a narrow construction of “appears to mimic a mirror” in the district court, Samsung should be held to that construction here and the same construction should be adopted here, for the reasons articulated by Samsung and its expert, and adopted by the district court. Ex.2009 at 12-14, Ex.2010, ¶¶58-65, Ex.2008 at 14-19. As addressed below, given Samsung’s complete failure to address (or even disclose to the Board) its own construction, and how its asserted Grounds meet that construction, the claims should be found not unpatentable for that reason alone.

B. “varying the rate at which the non-ordered steps are performed on the series of images according to the distance”

Limitation 1(h) of the 109 Patent requires “varying rate at which the non-ordered steps are performed on the series of images according to the distance.” In the District Court Litigation, the term was construed 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 at 28. The same construction should be applied in these proceedings. Ex.2013, ¶28.

**V. PETITIONERS HAVE FAILED TO SHOW THAT ANY
INSTITUTED GROUNDS RENDER THE CLAIMS OF THE 109
PATENT UNPATENTABLE**

**A. Ground 1: Petitioners Fail to Show Unpatentability of Claims 1-6,
8, and 17 in View of Rosenberg and Nakazawa**

Neither Rosenberg nor Nakazawa, alone or in combination, disclose at least limitation 1(c) of the 109 Patent under the District Court Litigation Claim Construction Order (Ex.2008) of the term “it appears to mimic a reflection of a mirror.” Ex.2013, ¶430. Petitioner Samsung proposed this construction, submitted an expert declaration in support of this construction, and argued for and obtained this construction at the District Court Litigation Claim Construction Hearing. Exs. 2009 (Samsung Responsive Claim Construction Brief (Dkt. No. 47)); 2010 (Declaration of Harley R. Myler, Ph.D. Regarding Claim Construction (Dkt. No. 47-2)); 2011 (Claim Construction Hearing Transcript); 2008 at 14-19. All the claims challenged under this combination, directly or via claim dependency, require this limitation of Claim 1.

Additionally, neither Rosenberg nor Nakazawa, alone or in combination, disclose limitation 1(h) of the 109 Patent. Ex.2013, ¶430. Finally, Petitioners have failed to demonstrate why a POSITA would be motivated to combine Rosenberg and

Nakazawa to meet the limitations of the challenged claims including limitations 1(c) and 1(h). *Id.* See Ex.2013, ¶¶430-464.

1. Neither Rosenberg Nor Nakazawa Discloses Limitation 1(c)

Neither Rosenberg nor Nakazawa, alone or in combination, disclose limitation 1(c), which recites “applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror,” under the District Court’s construction – a construction that Petitioner Samsung proposed. Section IV discussing claim construction in the District Court Litigation is incorporated herein by reference. *See* Ex.2013, ¶¶431-446.

First, neither the Petition nor its expert’s declaration ever ***contends***, let alone demonstrates, that Rosenberg, Nakazawa, or any combination of those references would achieve or disclose generating an “image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of the user movement,” as limitation 1(c) requires under Samsung’s own construction. Those words, and the concepts they refer to, do not appear anywhere in the Petition, and certainly not in the Petition’s discussion of limitation 1(c) for this Ground. *See* Pet. at 21-26. The same is true of Petitioners’ expert – Dr. Karam ***never*** opines that this construction would be met by the Rosenberg/Nakazawa combination (or any other art combination). *See* Ex.1004 at ¶¶ 124-129.

Second, to the extent that Samsung’s Petition and its expert address how the Rosenberg/Nakazawa combination discloses “mimic[king] a mirror,” Samsung never demonstrates, let alone discusses, that Rosenberg, Nakazawa, or their combination teach any image transformation techniques that would result in generating an image that meets the “double distance, same size” requirements of the limitation in view of the district court’s claim construction. *See* Pet. at 21-26, Ex.1004 at ¶¶ 124-129. In Rosenberg, Samsung and its expert point to purported disclosures of flipping an image along a vertical axis, and a scaling operation. Pet. at 21-22, Ex.1004 at ¶ 125. In Nakazawa, they contend that “correcting image distortion when the camera is above/below the display” is disclosed, but nothing more. Pet. at 22, Ex.1004 at ¶ 126. But Samsung and its experts never contend that a POSITA would understand these image transformations would result in an image that meets the specific requirements of “mimic a mirror,” let alone explain how they would do so. In fact, in adopting Samsung’s proposed construction, the district court explicitly rejected the contention that a laundry list of image transformations could disclose “appears to mimic a reflection of a mirror,” *see* Ex.2008 at 14, and found that the “double the distance,” “same size” requirements were required to “give effect to the word ‘mirror’” despite the recitation of specific image transformations. *Id.* at 18-19. Samsung is silent on how the transformations disclosed in the

Rosenberg/Nakazawa combination disclose this requirement, and this Ground must fail as a result.

In deposition, Samsung's expert Dr. Karam could not point to any opinion or discussion in her declaration that the Rosenberg/Nakazawa combination would disclose to a POSITA the specific requirements of its construction for "mimic a mirror" (Ex.1004, ¶¶ 124-129), and a simple word search of the Petition and expert declaration confirm there is none. Instead, Dr. Karam offered two excuses, neither of which has merit. First, while acknowledging that she applied a "broader," ordinary meaning construction of "mimic a mirror" in her analysis of limitation 1(c), (Ex.2012, 50:13-19), not the narrow construction Samsung obtained in the district court, Dr. Karam testified that nonetheless her opinions were "consistent" with that narrow construction, offering the following analogy: "Maybe to give you more clarification, if you have office furniture, it could be a chair or a desk, but still it's office furniture." Ex.2012, 50:20-51:3. Dr. Karam's analogy only underscores Petitioners' failure of proof: while she opined that the prior art combination disclosed a broad, plain-meaning interpretation of mirror-mimicking ("furniture"), she did not opine that the prior art disclosed the narrower requirements of Samsung's own construction (the "chair") – or even analyze the question. Second, Dr. Karam testified, for the first time, that the "knowledge of a POSITA" would fill in the gaps of the disclosures in Rosenberg and Nakazawa to achieve "mimic[ing] a mirror"

under Samsung's district court construction, relying on a discussion in the Technology Background section of her declaration discussing the optical characteristics of conventional mirrors, including a background reference called Straka. Ex.2012, 86:2-88:21; *see* Ex.1004 at ¶¶ 42-47.

There are numerous problems with Dr. Karam's testimony, which are again fatal to Petitioners' arguments. First, Petitioners and their expert never contended in the Petition and supporting declaration that the background knowledge of a POSITA would supply the knowledge necessary to combine the image transformations of Rosenberg and Nakazawa to generate 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." Ex.2008 at 19. This is simply an improper attempt to belatedly make new arguments not contained in the original Petition, and should be rejected. 37 C.F.R. § 42.22(a)(2) ("Each petition...must include...(2) A full statement of the reasons for the relief requested."); C.F.R. § 42.23(b) ("A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, patent owner response, or decision on institution."). U.S. Patent Trial and Appeal Board, Consolidated Trial Practice Guide (Nov. 2019) at 73. (Petitioners "may not submit new evidence or argument in reply that it could have presented earlier, e.g., to make out a *prima facie* case of unpatentability."). Instead, Samsung

argued, without more, that “*Rosenberg* and *Nakazawa* render obvious this limitation. Decl. ¶¶124-129.” Pet. at 21. There is no mention, or even discussion, of “the knowledge of a POSITA,” or how such knowledge concerning the optical characteristics of a conventional mirror would lead them to apply “transformation mapping” to the combination of *Rosenberg* and *Nakazawa* to achieve the specific requirements of “mimic[ing] a mirror” as claimed. *Rosenberg*’s “traditional mirror emulation” mode only flips an image from left to right along a vertical axis. See Ex.1005, ¶ 0027 (explaining that in *Rosenberg*’s “traditional mirror mode,” images are “a left-right inverted representation of the video signal captured by the camera.”). See also *id.* at ¶¶0026, 0036, 0039, 0041. But the 109 Patent confirms that merely flipping an image is insufficient to convincingly mimic a mirror (Ex.1001, 15:59-61) (“Specifically, attempting to solve the virtual mirror problem by only flipping the image vertically as was proposed in the prior art is insufficient to create a mirror experience.”), and Claim 1 recites flipping the image as only one step in the mirror-mimicking process. Petitioners and Dr. Karam do not explain what additional transformations a POSITA would know to apply to solve this problem based on their knowledge, or contend that they would result in a technique that meets the requirements of limitation 1(c).

This points to a more fundamental problem with Dr. Karam’s excuse. It is of no consequence that the optical properties of a conventional mirror were well-known

in the art; the 109 Patent concedes this. Ex.1001 at 2:4-46. That fact supplies **none** of what Samsung's proof is missing, *i.e.*, that a POSITA would know that the disclosed Rosenberg/Nakazawa image transformations would produce images “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,” or what additional image transformations would be required, drawn from the purported “background knowledge” of a POSITA, to result in images that meet these requirements. Indeed, the primary object of the 109 Patent is to describe the image transformations that can effectively “mimic a mirror,” and the 109 Patent reports that “so far no system has been provided for imitating a mirror convincingly.” Ex.1001, 2:49-50. *See also id.* at 15:59-61 (“Specifically, attempting to solve the virtual mirror problem by only flipping the image vertically as was proposed in the prior art is insufficient to create a mirror experience.”). So there is no basis, either procedurally or substantively, for Samsung to belatedly contend that the “knowledge of a POSITA” would fill in the gaps in its proof.

There are other problems with Samsung's arguments and evidence. First, contrary to Samsung's arguments, Rosenberg discloses only a rudimentary form of mirror-mimicking – flipping the image on its axis (Ex.2013, ¶¶438-439) – which meets neither Samsung's district court construction or a broader, plain meaning construction of this limitation. Rosenberg explains that with a conventional mirror,

when a user places themselves only a few inches away from the mirror, the user would end up staring into their own eyes. *See, e.g.*, Ex.1006, ¶0039. However, Rosenberg regards this feature of a conventional mirror as undesirable and inconvenient and Rosenberg makes clear that this is not how his system operates. Ex.2013, ¶¶436-437.

When in a traditional mirror emulation mode, the frozen image is a left-right inverted image of the user. . . . Thus a user may be looking in the mirror, engage the mirror image-freeze feature, and have the then current (or substantially current) image that was displayed upon engaging the feature, freeze upon the screen for an extended period. This will allow the user, for example, to examine the frozen image in detail. **This is particularly useful for a user who wishes to change his or her distance and/or location with respect to the mirror to get a better view of his or her image, but NOT have the image change as the user moves.** For example, a user may wish to step closer to the mirror and view a portion of his or her face from only a few inches away. **With a traditional optical mirror, such an act would cause the reflected image to change such that the user who is just a few inches away ends up staring into his or her own eyes. In reality he may wish to freeze the image, step close, and then view some other portion of the face. The mirror image-freeze feature of the present invention enables this enhanced mirroring operation.**

Ex.1005, ¶0039. A POSITA would therefore understand Rosenberg to find the optical property of a conventional mirror whereby the person looking into the mirror

appears at double the distance from the mirror to be undesirable, because it does not permit the benefits (such as enabling closer inspection of the user's own image) that Rosenberg is trying to achieve. Ex.2013, ¶¶436-437.

Because Rosenberg's system does not have this optical property of a conventional mirror, it "is particularly useful for a user who wishes to change his or her distance and/or location with respect to the mirror to get a better view of his or her image, but NOT have the image change as the user moves." Ex.1005, ¶0039. A POSITA would understand this disclosure to be teaching away from incorporating the conventional mirror optical property of the user's image appearing roughly double the user's distance to the mirror. Ex.2013, ¶¶436-437.

To accomplish its goals, Rosenberg discloses two primary inventive methods: (1) mirror-image freeze and (2) mirror-image buffering. Ex.1005, ¶0037. In mirror-image freeze, the user can selectively freeze a current mirror image of the user which is then statically displayed on the device. Ex.1005, ¶¶0039, 0087, Fig.7. Regardless of the user's distance to the camera, the displayed image will not change, because it is a still image.

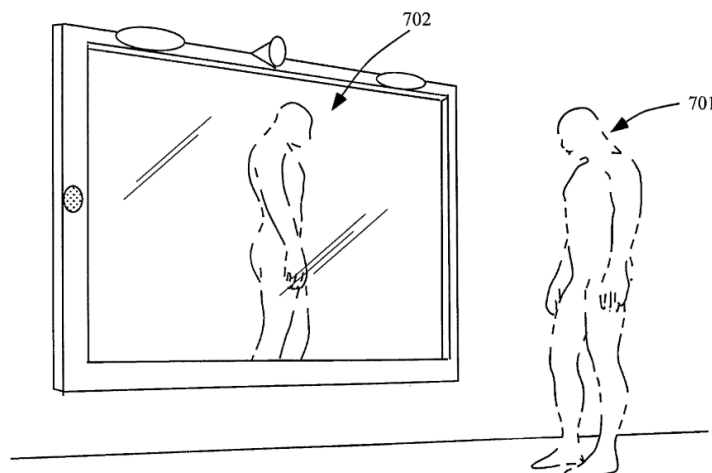


Fig. 7

Ex.1005, Fig.7.

In mirror-image buffering, a certain number of real-time images of the user are stored which the user can play back. Ex.1005, ¶0044. Regardless of the user's distance to the camera, the played-back buffered images will not change. Similarly, in multi-view mirroring, in which a composite of the user is created based on frozen or buffered images, regardless of the user's distance to the camera, the composite image(s) will not change. Ex.1005, ¶0048. Additionally, the zoom-in and/or zoom-out functionality disclosed in Rosenberg is not based on the user's distance to the camera at all but rather on a user's affirmative commands and can render an image that appears to be much greater or much less than roughly double the user's distance to the camera. Ex.1005, ¶0050. Ex.2013, ¶¶433-435.

In keeping with its objectives, Rosenberg does not disclose producing a series of images that appear at roughly double the user's distance to the camera as required

by the District Court’s claim construction of the term “mirror tracking mode.” Rather, Rosenberg only discloses inversion of the user’s image (Ex.1005, ¶¶0026-0027) – something that Samsung argued is insufficient to meet this limitation (Ex.2009 (Samsung Responsive Claim Construction Brief) at 13). What’s more, Rosenberg repeatedly describes a standard or traditional mirror as simply one that inverts the user’s image. “This left-right inversion process is performed to present the user with a traditional mirror image view of himself or herself, **inverted in a similar was [sic] as it would be seen in a traditional mirror.**” Ex.1005, ¶0026. “In a basic mode of operation, referred to herein a traditional mirror emulation mode, the digital mirror is operative to replicate the performance of a standard household mirror, **providing the user with a left-right reversed frontal image** of himself or herself when standing before the display.” Ex.1005, ¶0027. A POSITA would understand Rosenberg to disclose only primitive mirror-mimicking and would not have understood Rosenberg to address the more difficult technical issue of having the inverted images appear at roughly double the distance of the user to the camera, in which the user remains at roughly the same size, regardless of movement. Ex.2013, ¶¶438-441.

As discussed, the 109 Patent discloses that flipping is insufficient to convincingly mimic a mirror, and instead recites in Claim 1 a series of image processing steps must be performed, as claimed. This particular combination of

steps to solve the problem is not suggested by Rosenberg, Nakazawa, their combination, or any Ground raised by Petitioners.

Nakazawa also does not disclose “it appears to mimic a reflection of a mirror” as construed in the District Court Litigation in accordance with Petitioner Samsung’s own construction. Ex.2013, ¶442. Nakazawa is directed to a photographing device that corrects the line of sight of a captured facial image. *See, e.g.*, Ex.1007, ¶¶0001, 0007. Ex.2013, ¶443. Nakazawa does not disclose anything about mirroring the user’s appearance at the basic level of simply inverting the image, let alone disclose more advanced mirror mimicking techniques such as ensuring the user’s image appears at roughly double the distance to the camera. At most, a POSITA may have understood that the user’s image in Nakazawa *could* be mirrored. Ex.2013, ¶444. But a POSITA would not have understood Nakazawa to have disclosed the more difficult technical issue of having the inverted image appear at roughly double the distance of the user to the camera, and at the same size regardless of movement. Ex.2013, ¶445. Nakazawa’s discussion of magnification of the user’s image is not of the user’s image as a whole, but rather, only for the orientation of the user’s face in order to correct the user’s line of sight. *See, e.g.*, Ex.1007, ¶¶0034, 0036. A POSITA would not regard this technique as disclosing that requirements of limitation 1(c) under the District Court Litigation claim construction. Ex.2013, ¶446. Nor would any combination of these references disclose that limitation.

Ex.2013, ¶¶ 436-446. As discussed, Samsung does not even contend they do under its own construction.

2. Petitioners Fail to Show Motivation to Combine Rosenberg and Nakazawa for Limitation 1(c)

As discussed above, a POSITA would regard Rosenberg as teaching away from having a user's image appear at roughly double the distance of the user to the camera. Ex.2013, ¶¶436-347, 449. And, a POSITA would understand Nakazawa to disclose, at most, basic image inversion. Ex.2013, ¶444, 449. Although the optical properties of conventional mirrors have been known for millennia, how to convincingly emulate these properties on a digital display was not known. Moreover, it is likely that a POSITA reading Rosenberg and Nakazawa would not have considered the relative *importance* of including these optical properties beyond simple inversion. Ex.2013, ¶450. Given that Rosenberg's "traditional mirror mode" discloses only flipping an image, it is apparent that Rosenberg did not consider the importance of addressing these optical properties, or implement them. Moreover, since Rosenberg is directed to enabling features such as "mirror freeze mode" which necessarily do not incorporate those properties to permit better inspection of a user's image (Ex.1005, ¶ 0039), Rosenberg teaches away from incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera, and Rosenberg would not suggest to a POSITA to add additional transformations to convincingly achieve these optical properties. Ex.2013, ¶¶450.

Any suggestion that a POSITA would be motivated to combine Rosenberg (which teaches away from incorporating this property) with Nakazawa (which does not even acknowledge this property) to meet limitation 1(c) as construed in the District Court Litigation (Ex.2008 at 19) would be impermissibly based on hindsight bias. *In re Gartside*, 203 F.3d 1305, 1319 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (“Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight.”); Ex.2013, ¶451. *See* Ex.2013, ¶¶447-451.

3. Neither Rosenberg Nor Nakazawa, Alone Or In Combination, Disclose Limitation 1(h)

Rosenberg does not disclose or suggest varying either the frame rate or the rate of performing image processing steps at all, let alone based on distance. Ex.2013, ¶¶453-454. *See* Ex.2013, ¶¶452-458. A POSITA would regard Rosenberg's silence as to varying the rate of performing image processing steps as non-disclosure. Ex.2013, ¶454. Additionally, a POSITA would regard the disclosures in Rosenberg relating to proximity detection (*see, .e.g.*, Ex.1005, ¶¶0025, 0032, 0056, 0069, 0114) 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. Ex.2013, ¶455. It is likely that a POSITA reading Rosenberg would not have considered the need for

varying the rate of performing processing steps within any one modality in which a series of images are captured and manipulated based on a user's distance, which is what 109 limitation 1(h) recites. Ex.2013, ¶456. When confronted with this fact, Dr. Karam, for the first time under cross-examination, asserted that the modes in Rosenberg should be viewed as a whole, something she called "super mode". Ex.2012, 99:12-100:21. Not only is there no "super mode" disclosed in Rosenberg but also Rosenberg identifies various modes as discrete operational modes each with their own processes. Ex.2013, ¶¶457-458. Nowhere does Rosenberg disclose that the processes within each of those modes should be considered as individual processes within some continuous operational "super mode". *Id.* Indeed, Dr. Karam offers no such explanation for her "super mode" theory because it is not part of her declaration. Rather Dr. Karam's discussion of limitation 1(h) does not include any suggestion that a POSITA would have understood or that it would have been obvious to a POSITA to regard the modes in Rosenberg as processing steps which are varied as the device changes operational modes. *See* Ex.1004, ¶¶ 149-155. Conversely, in his declaration, Dr. Forsyth opines that a POSITA would not have understood the discrete modes disclosed Rosenberg to be merely processing steps in the overall operation of Rosenberg's system. Ex.2013, ¶¶457-458. A POSITA would not have regarded switching between discrete modes in Rosenberg based on proximity sensors as meeting limitation 1(h) because the discrete modes in Rosenberg are not

steps and Rosenberg discloses proximity to the camera only with respect to whether to turn on or off the mirror display functionality – not the specific modes utilizing the mirror display as a mirror. *See, e.g.*, Ex.1005, ¶¶ 0032, 0033, 0056, 0069; 0071, 0072, 0114. Ex.2013, ¶¶457-458.

Nakazawa does not suggest varying either the frame rate or the rate of performing image processing steps at all, let alone based on distance. Ex.2013, ¶¶459-460. A POSITA would regard Nakazawa's silence as to varying the rate of performing image processing steps as non-disclosure. Ex.2013, ¶460. Since Nakazawa adds nothing to the discussion, nor would the combination of these references disclose limitation 1(h).

Neither reference discloses limitation 1(h), alone or in combination, and any argument that varying the rate based on distance would have been obvious to a POSITA reading either Rosenberg or Nakazawa is impermissibly based on hindsight bias. *In re Gartside*, 203 F.3d at 1319.; *In re Dembiczak*, 175 F.3d at 999. Ex.2013, ¶461.

4. Petitioners Fail to Show Motivation to Combine Rosenberg and Nakazawa for Limitation 1(h)

As discussed above, a POSITA would regard both Rosenberg and Nakazawa as not disclosing varying either frame rate or rate of performance of image processing steps. A POSITA would not have been motivated to combine Rosenberg and Nakazawa as to limitation 1(h) at least because neither reference even suggests

the varying required by this limitation. Furthermore, it would not have been obvious to a POSITA to include this property and any suggestion that it would have been obvious is impermissibly based on hindsight. Ex.2013, ¶¶462-464.

At least because Petitioners have not shown that the Ground 1 references establish unpatentability of Claim 1, this Ground also fails for Claims 2-6, 8, and 17, each of which depends from Claim 1. Moreover, the same failure of proof regarding Petitioners' own construction of "appears to mimic a mirror" provides an additional basis to find Claims 2, 3, 4, 5, and 6 not unpatentable. Each of these claims recites an additional requirement of the "transformation mapping" that is applied so that the image "appears to mimic a reflection of a mirror." *See, e.g.,* Ex.1001 Claim 2 ("wherein the transformation mapping renders an image appearing to have been taken from a camera positioned at eye-level height and pointing horizontally"); Claim 3 ("transformation mapping comprises at least a tilt transformation and an elevation transformation"). As with Claim 1, Petitioners do not contend, let alone demonstrate, that the Ground 1 references, alone or in combination, disclose that these additional transformations would achieve the specific "double distance, same size" requirements of Samsung's own construction, or how they would. They do not disclose those requirements. This is again a failure of proof.

B. Ground 2: Petitioners Fail to Show Unpatentability of Claims 1-6, 8, 11, and 17 in View of Rosenberg, Nakazawa, and Hatanaka

As discussed above in Section V.A. (Ground 1) incorporated herein by reference, Petitioners have failed to show that the combination of Rosenberg and Nakazawa renders Claim 1 obvious, or that there would be motivation to combine the references. Ex.2013, ¶465. Petitioners do not even contend that Hatanaka discloses limitation 1(c) under the District Court Litigation Claim Construction Order (Ex.2008) of the term “it appears to mimic a reflection of a mirror”, and it does not. *See also*, Exs. 2009-2011. Additionally, Hatanaka does not disclose limitation 1(h) of the 109 Patent. Finally, Petitioners have failed to demonstrate why a POSITA would be motivated to combine Rosenberg, Nakazawa, and Hatanaka to meet the limitations of the challenged claims including limitations 1(c) and 1(h). Ex.2013, ¶466. All the claims challenged under this combination, directly or via claim dependency, require these limitations of Claim 1. *See* Ex.2013, ¶¶465-489.

1. Hatanaka, Alone Or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(c)

As discussed above in Section V.A. (Ground 1), incorporated herein by reference, neither Rosenberg nor Nakazawa discloses limitation 1(c), including “it appears to mimic a reflection of a mirror” under the claim construction Samsung obtained from the district court. Hatanaka adds nothing to remedy this failure, and so Ground 2 fails as well. Hatanaka does not disclose “it appears to mimic a

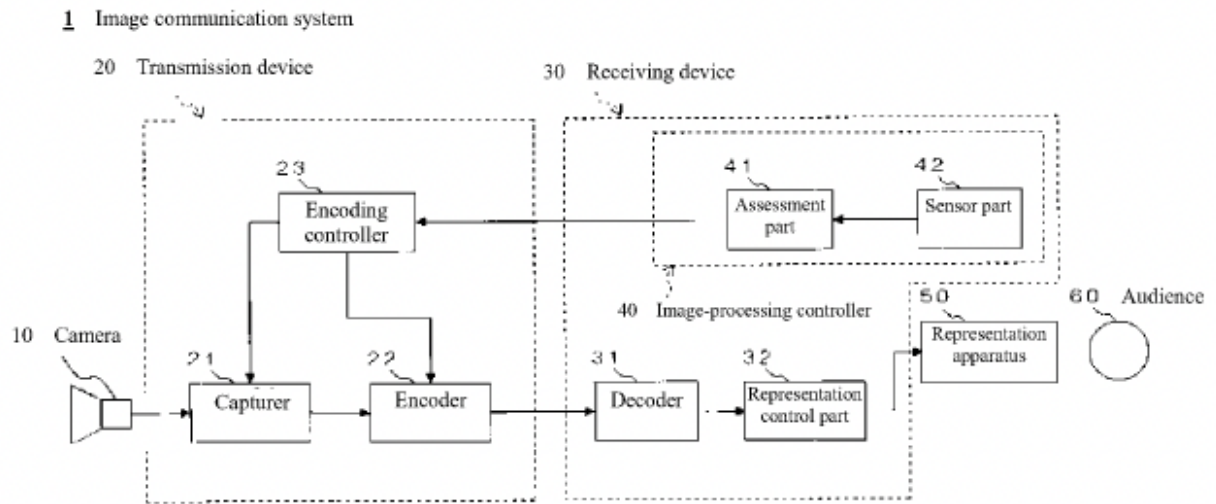
reflection of a mirror”. Ex.2013, ¶¶468. Nor do Petitioners contend that it does. *See* Pet. at 46 (contending only that, for limitations 1(pre) through 1(g), “*Rosenberg and Nakazawa* render obvious these limitations” but not contending Hatanaka discloses these limitations). For all of the reasons stated in Ground 1, neither Samsung’s Petition nor its expert’s declaration ever **contends**, let alone demonstrates, that:

- These references, either alone or in combination, would achieve or disclose generating an “image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of user movement,” as limitation 1(c) requires under Samsung’s own construction, or how they would (*see* Pet. at 46; Ex.1004, ¶ 200);
- The “knowledge of a POSITA” would fill in the gaps of the disclosures in these references to achieve “mimic[king] a mirror” under Samsung’s district court construction, let alone how that knowledge would do so. As described in connection with Ground 1, any such theory, articulated for the first time in cross-examination, is an improper attempt to introduce new argument that could have been made in the Petition but was not.

Hatanaka does not disclose anything about mirroring the user’s appearance at the basic level of simply inverting the image, let alone disclose more advanced mirror mimicking techniques such as those claimed in the 109 Patent. Ex.2013, ¶¶

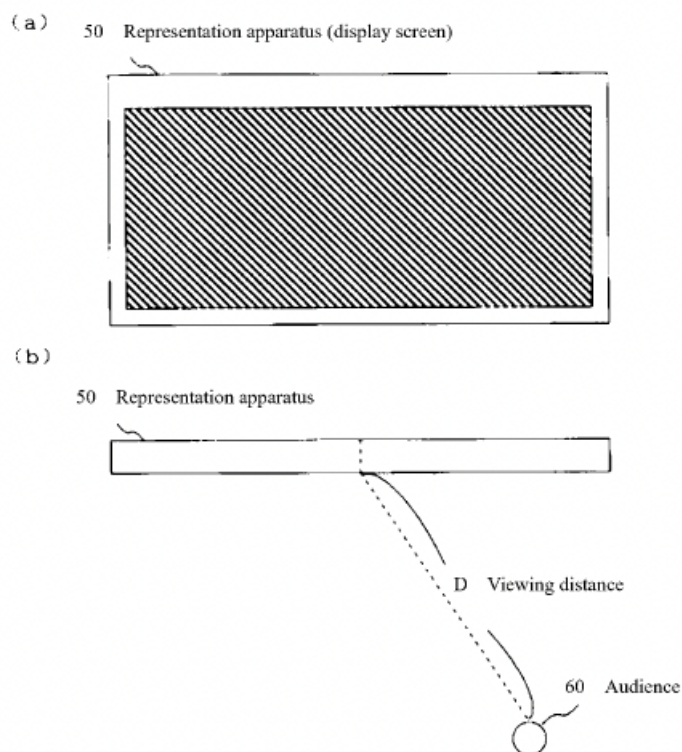
470-471. Unlike the 109 Patent, which is focused on mimicking a conventional mirror, Hatanaka is directed to encoding and presentation of visual content based on a viewer's distance to a display, not to the camera. *See, e.g.*, Ex.1009, ¶¶0009, 0010, Fig.1, Fig.2. Ex.2013, ¶469.

Figure 1



Ex.1009, Fig.1.

Figure 2



Ex.1009, Fig.2.

A POSITA would not have understood Hatanaka to disclose the presentation of images as if they were reflected from a conventional mirror. Ex.2013, ¶¶470. A POSITA would not regard Hatanaka as disclosing reversing an image of a user nor having that reversed reflection appear at roughly double the distance from the camera nor maintaining roughly the same size regardless of the user movement. Ex.2013, ¶471. Even if Hatanaka were combined with Rosenberg/Nakazawa, that combination would not result in limitation 1(c) because any change in processing of Hatanaka is based on distance of the viewer and not related to projecting the user's image at twice the distance and roughly the same size. Ex.2013, ¶¶465-471.

Accordingly, Petitioners have not shown that these references, alone or in combination, disclose limitation 1(c).

2. Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Hatanaka for Limitation 1(c)

As discussed above in Section V.A. (Ground 1) incorporated herein by reference, Petitioners have failed to show motivation to combine and obviousness of Claim 1 based on Rosenberg and Nakazawa, including limitation 1(c). Ex.2013, ¶472.

There would also be no motivation to combine Rosenberg and Nakazawa with Hatanaka for limitation 1(c). Ex.2013, ¶473. *See* Ex.2013, ¶¶472-479. As discussed above, a POSITA would regard Rosenberg as teaching away from having a user's image appear at roughly double the distance of the user to the camera. Ex.2013, ¶¶436-437, 474. And, a POSITA would not have understood Hatanaka to disclose reversing the images displayed to a viewer. Ex.2013, ¶470, 475. Since Hatanaka is not directed to attempting to mimic a mirror, a POSITA would not regard Hatanaka as disclosing reversing such images or displaying them at roughly double the distance from the camera. Ex.2013, ¶471, 476. Moreover, unlike Rosenberg, Nakazawa, and the 109 Patent which are focused on capturing images of the user and the viewing experience of the user, Hatanaka is focused on encoding and presentation of visual content based on a *viewer's* distance to a display. *See, e.g.*, Ex.1009, ¶¶0009, 0010. A POSITA would not have understood the user in

Rosenberg, Nakazawa, and the 109 Patent to be akin to the viewer in Hatanaka. Ex.2013, ¶¶477. A POSITA would understand that the user in Rosenberg, Nakazawa, and the 109 Patent is also the subject of the image and the capturing and manipulation of the user's image is intended to realistically reflect the user's image (as if it were in a mirror). *Id.* Conversely, a POSITA would understand that Hatanaka's changes to encoding based on the viewer's distance to the display is not comparable to manipulating an image to realistically reflect an image (as if it were in a mirror). *Id.* Additionally, unlike Claim 1 of the 109 Patent, Hatanaka is focused on the distance of the *viewer* to the display because Hatanaka is concerned with image encoding, throughput efficiency, and display. Ex.2013, ¶478. Hatanaka would not suggest to a POSITA that the distance of the viewer to the display for encoding and throughput efficiency purposes is relevant to how a user's image would be processed to mimic a mirror. *Id.* Therefore, this combination of references would not suggest incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera. *Id.*

A POSITA would not have been motivated to combine these references for limitation 1(c) because Rosenberg teaches that flipping the image is sufficient and, if anything, teaches away from incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera, Nakazawa

does not disclose this optical property at all, and Hatanaka does not attempt to replicate a mirror experience nor discloses this optical property at all. Ex.2013, ¶479.

**3. Hatanaka, Alone or In Combination With
Rosenberg/Nakazawa, Does Not Disclose Limitation 1(h)**

As discussed above in Section V.A. (Ground 1), incorporated herein by reference, neither Rosenberg nor Nakazawa discloses limitation 1(h). Hatanaka adds nothing to remedy this failure, and so Ground 2 fails here as well. Ex.2013, ¶481. *See generally* Ex.2013, ¶¶480-492. Hatanaka is directed to encoding and presentation of visual content based on a viewer's distance to a display. *See, e.g.*, Ex.1009, ¶¶0009, 0010. Ex.2013, ¶482. Hatanaka determines distance from a display apparatus (a “representation output part”) to a viewer of content (*see, e.g., id.*), 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” (*id.* at ¶ 0039). Ex.2013, ¶483. 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.*

Nor would the combination of Rosenberg's simple mirror emulation technique of inverting an image with Hatanaka's varying encoding parameters

disclose this limitation, as Petitioners contend. Pet. at 49-50. A POSITA would know that Hatanaka's disclosure of varying encoding parameters such as resolution or frame rate is varying a property of a system that is very different from the rate at which processing steps are performed, which is disclosed in the 109 Patent, and for a different purpose. Ex.2013, ¶484. Hatanaka is not directed toward transformation of captured images, such as by flipping, resizing, or applying other image transformations so that the image "appears to mimic a mirror" under the construction Samsung has obtained. Hatanaka does not disclose any of those things. Instead, Hatanaka is concerned with varying the parameters of an encoder so that it encodes content to have different resolutions, frame rate, quantization step size, compression ratio and so on to reduce throughput. Ex.1009, ¶¶0009, 0010. A POSITA would have known that each of these variations in encoder parameters can be achieved with image processing at a fixed rate. Ex.2013, ¶485. No disclosure in Hatanaka explicitly states that a POSITA should vary the rate at which image processing steps are applied, nor does any disclosure implicitly require varying the rate at which image processing steps are applied. Ex.2013, ¶486. Combining Hatanaka's encoding changes with Rosenberg's simplistic mirror emulation (which the 109 Patent describes as insufficient in any event) would not result in varying the image transformation *steps* recited in the 109 Patent. Ex.2013, ¶487. Instead, that combination would result in a system which varied encoding parameters but not the

performance of image transformations – resulting in images which were not transformed, but just encoded for transmission at different resolutions or frame rates.

Id.

Nor would it be obvious to a POSITA to modify Rosenberg/Nakazawa in view of Hatanaka providing the **concept** of varying some aspect of image processing, to achieve the claimed varying of image transformation **steps** of the 109 Patent, as Petitioners appear to contend (Pet. at 49-50). Ex.2013, ¶488. Petitioners contend that this modification would merely “apply[] a known technique to improve a similar device in the same way to yield the predictable result of efficient image processing” (Pet. at 50), but none of these assertions are credible. *Id.* Not only would a POSITA not regard Rosenberg’s mirror device and Hatanaka’s display system as similar devices, but as noted above, Hatanaka’s disclosure that image encoding can be variable based on distance from a display to an audience is a different technical concept than either Rosenberg’s disclosure of performing a simple image transformation (flipping an image along its vertical axis) (*e.g.*, Ex.1005, ¶0039), and the 109 Patent’s disclosure of varying the rate at which image transformation **steps** are applied based on distance to the subject captured in a series of images. *Id.* Image encoding, and variations in encoding resolution and frame rate would be well-known to a POSITA as techniques to provide efficient processing and throughput. Ex.2013, ¶ 488. But the leap from that knowledge to modifying the rate at which a set of image

transformation steps were applied to a series of captured images so that they “appear to mimic a mirror” would not be obvious to a POSITA. While both are within the broad general category of “image processing,” they are different technical concepts, with different technical considerations. *Id.* As Hatanaka explains, image encoding converts the data representing an image into a format suitable for storage and transfer (such as to Hatanaka’s display) for subsequent decoding and display. Ex.1009, Abstract, ¶¶0019, 0020. Ex.2013, ¶489. But Rosenberg discloses transforming the appearance of an image itself by manipulating the pixels of the image, *i.e.*, by flipping the image along a vertical axis, in a simple attempt to emulate a traditional mirror. Ex.1005, ¶0026 (explaining that in Rosenberg’s “traditional mirror mode,” images are “a left-right inverted representation of the video signal captured by the camera.”). *See also id.* at ¶¶0027, 0036, 0039, 0041. Ex.2013, ¶489. Petitioners nowhere explain why a POSITA would find it obvious in view of Hatanaka to vary the rate at which Rosenberg’s technically different kind of “image processing” steps occur, or why that POSITA would expect it to be functional or desirable. It would not be. Ex.2013, ¶ 489. A POSITA would not find it obvious to rely on Hatanaka teaching the general concept of rate varying for image processing (which it does not) to combine with Rosenberg’s flipping, as it would not be apparent which image processing steps could be applied with varying frequency, because different kinds of image processing step have different computational demands and will have

different effects on the user experience. Ex.2013, ¶490. This impact on user experience is an important consideration (*id.*), as the 109 Patent explains:

Another feature that may be implemented in any of the above described embodiments is the frequency of transformation parameter update. That is, at times the user may prefer a stable image when he is standing stationary in front of the screen that mimics the mirror. Having the transformation mapping engine change while user is stationary may create an uncomfortable feeling. On the other hand, when the user is moving faster toward or backward from the screen, it may be fine to update the transformation parameters faster.

Ex. 1001, 27:41-49.

As shown, the 109 Patent teaches a specific set of steps which (a) can be executed fast enough to be effective and (b) produce the correct user experience. Hatanaka's very different disclosure of variations in image encoding would not make its application to Rosenberg/Nakazawa to achieve the claimed variation in image processing steps obvious to a POSITA. Ex.2013, ¶491.

None of the teachings of Rosenberg/Nakazawa or Hatanaka would render obvious modifying Rosenberg to provide such an experience, and a POSITA would regard Hatanaka's silence as to varying the *rate* of performing image processing *steps* as non-disclosure. Any argument that varying the rate would have been obvious to a POSITA to implement with Rosenberg upon reading Hatanaka is

impermissibly based on hindsight bias. *In re Gartside*, 203 F.3d at 1319; *In re Dembiczak*, 175 F.3d at 999. Ex.2013, ¶492.

4. Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Hatanaka for Limitation 1(h)

A POSITA would not have been motivated to combine Rosenberg, Nakazawa, and Hatanaka for limitation 1(h) because none of these references disclose limitation 1(h) and even assuming motivation to combine, which there is not, the limitation would not be met. Ex.2013, ¶494. *See generally*, Ex.2013, ¶¶493-498.

Moreover, unlike Rosenberg, Nakazawa, and the 109 Patent which are focused on capturing images of the user and the viewing experience of the user, Hatanaka is focused on encoding and presentation of visual content based on a *viewer's* distance to a display. *See, e.g.*, Ex.1009, ¶¶0009, 0010. A POSITA would not have understood the user in Rosenberg, Nakazawa, and the 109 Patent to be akin to the viewer in Hatanaka. Ex.2013, ¶ 496. A POSITA would understand that the user in Rosenberg, Nakazawa, and the 109 Patent is also the subject of the image and the capturing and manipulation of the user's image is intended to realistically reflect the user's image (as if it were in a mirror). *Id.* Conversely, a POSITA would understand that Hatanaka's changes to encoding parameters based on the viewer's distance to the display is not comparable to manipulating an image to realistically reflect an image (as if it were in a mirror). *Id.* Additionally, unlike Claim 1 of the 109 Patent, Hatanaka is focused on the distance of the *viewer* to the display because

Hatanaka is concerned with image encoding, throughput efficiency, and display. Ex.2013, ¶¶ 497-498. Hatanaka would not suggest to a POSITA that the distance of the viewer to the display for encoding and throughput efficiency purposes is relevant to how a user's image would be processed to mimic a mirror. Nor does Hatanaka disclose or suggest varying the rate of performance of any disclosed functionality. Ex.2013, ¶498.

At least because Petitioners have not shown that the Ground 2 references establish unpatentability of Claim 1, this Ground also fails for Claims 2-6, 8, 11, and 17, each of which depends from Claim 1. Moreover, the same failure of proof regarding Petitioners' own construction of "appears to mimic a mirror" provides an additional basis to find Claims 2, 3, 4, 5, and 6 not unpatentable. Each of these claims recites an additional requirement of the "transformation mapping" that is applied so that the image "appears to mimic a reflection of a mirror." *See, e.g.*, Ex.1001 Claim 2 ("wherein the transformation mapping renders an image appearing to have been taken from a camera positioned at eye-level height and pointing horizontally"); Claim 3 ("transformation mapping comprises at least a tilt transformation and an elevation transformation"). As with Claim 1, Petitioners do not contend, let alone demonstrate, that the Ground 2 references, alone or in combination, disclose that these additional transformations would achieve the specific "double distance, same size" requirements of Samsung's own construction,

or how they would. They do not disclose those requirements. This is again a failure of proof.

C. Ground 3: Petitioners Fail to Show Unpatentability of Claims 1-6, 8, and 17 in View of Rosenberg, Nakazawa, and Tripathi

As discussed above for Ground 1, incorporated herein by reference, Petitioners have failed to show that the combination of Rosenberg and Nakazawa renders Claim 1 obvious, or that there would be motivation to combine the references. Petitioners do not even contend that Tripathi discloses limitation 1(c) under the District Court Litigation Claim Construction Order (Ex.2008) of the term “it appears to mimic a reflection of a mirror”, and it does not. *See also*, Exs. 2009-2011. Additionally, Tripathi does not disclose limitation 1(h) of the 109 Patent. Finally, Petitioners have failed to demonstrate why a POSITA would be motivated to combine Rosenberg, Nakazawa, and Tripathi to meet the limitations of the challenged claims including limitations 1(c) and 1(h). All the claims challenged under this combination, directly or via claim dependency, require these limitations of Claim 1. Therefore, Petitioners have failed to establish unpatentability of Claims 1-6, 8, and 17. *See* Ex.2013 ¶¶ 78-91, 499-535.

1. Tripathi Alone Or In Combination With Rosenberg/Nakazawa, Does Not Disclose Limitation 1(c)

As discussed above in Section V.A. (Ground 1), incorporated herein by reference, neither Rosenberg nor Nakazawa discloses limitation 1(c), including “it

appears to mimic a reflection of a mirror” under the claim construction Samsung obtained from the district court. Tripathi adds nothing to remedy this failure, and so Ground 3 fails as well, because Tripathi does not disclose “it appears to mimic a reflection of a mirror” as construed in the District Court Litigation in accordance with Petitioner Samsung’s proposed construction. Nor do Petitioners contend that it does. *See* Pet. at 53 (contending that, for limitations 1(pre) through 1(g), “*Rosenberg* and *Nakazawa* render obvious these limitations.”). For all of the reasons stated in Ground 1, neither Samsung’s Petition nor its expert’s declaration ever ***contends***, let alone demonstrates, that:

- These references, either alone or in combination, would achieve or disclose generating an “image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of user movement,” as limitation 1(c) requires under Samsung’s own construction, or how they would (*see* Pet. at 53; Ex.1004, ¶ 220);
- The “knowledge of a POSITA” would fill in the gaps of the disclosures in these references to achieve “mimick[ing] a mirror” under Samsung’s district court construction, let alone how that knowledge would do so. As described in connection with Ground 1, any such theory, articulated for the first time in

cross-examination, is an improper attempt to introduce new argument that could have been made in the Petition but was not.

See Ex.2013 ¶¶ 79-89, 499-506. Tripathi is directed to adjusting display frame rate in response to power status of the device, content type (e.g., dynamic or static), and/or affirmative user input. *See, e.g.*, Ex.1040, at Abstract, 1:60-62, 2:1-3, 6:11-16, 10:40-44. Tripathi does not disclose mirror mimicking properties at all. *See* Ex.2013 ¶¶ 79-89, 504-506. Unlike the 109 Patent, Tripathi is not directed to capturing images, let alone capturing an image of a user and attempting to mimic a reflection of a mirror with a digital device. *Id.* Tripathi does not disclose capturing a user's image (or any image), nor does Tripathi disclose reversing a user's image (or any image), nor does Tripathi disclose that the reversed image appears at roughly double the distance from the camera, nor does Tripathi disclose that the reversed image maintains roughly the same size regardless of user movement. *Id.* Therefore, a POSITA would not regard Tripathi as disclosing limitation 1(c) under the claim construction in the District Court Litigation or otherwise. *Id.* Accordingly, Petitioners have not shown that these references, alone or in combination, disclose limitation 1(c).

2. Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Tripathi for Limitation 1(c)

As discussed above in Section V.A. (Ground 1) incorporated herein by reference, Petitioners have failed to show motivation to combine and obviousness of

Claim 1 based Rosenberg and Nakazawa. And as discussed above in Section V.C. (Ground 3) incorporated herein by reference, Tripathi does not disclose limitation 1(c) under the claim construction in the District Court Litigation or otherwise. *See* Ex.2013 ¶¶ 504-506. A POSITA would not have been motivated to combine Rosenberg, Nakazawa, and Tripathi to meet limitation 1(c) of the 109 Patent, because, as discussed in Sections V.A (Ground 1) and C.1 (Ground 3), a POSITA would not regard any of these references as disclosing this limitation under the claim construction in the District Court Litigation. *See* Ex.2013 ¶¶ 499-535.

Additionally, a POSITA would not have been motivated to combine Rosenberg and Nakazawa with Tripathi to meet limitation 1(c) because unlike the 109 Patent and unlike Rosenberg and Nakazawa, Tripathi is not directed to capturing images. *See* Ex.2013 ¶¶ 507-516. Since Tripathi is not directed to capturing a user's image or attempting to mimic a mirror, a POSITA would not regard Tripathi as disclosing reversing such images or displaying them at roughly double the distance from the camera. *See* Ex.2013 ¶¶ 511-512. Moreover, unlike Rosenberg, Nakazawa, and the 109 Patent which are focused on capturing images of the user and the viewing experience of the user, Tripathi is focused on adjusting display frame rate in response to power status of the device, content type (e.g., dynamic or static), and/or affirmative user input. *See, e.g.,* Ex.1040, at Abstract, 1:60-62, 2:1-3, 6:11-16, 10:40-44. A POSITA would understand that the user in Rosenberg, Nakazawa,

and the 109 Patent is also the subject of the image and the capturing and manipulation of the user's image is intended to realistically reflect the user's image (as if it were in a mirror). *See* Ex.2013 ¶¶ 512-515. Conversely, a POSITA would understand that Tripathi is not directed to capturing images, let alone images of the viewer, and Tripathi changes frame rate based on the power status of the device, content type, or affirmative user input is not comparable to manipulating a user's image to realistically reflect an image (as if it were in a mirror). *Id.* Tripathi's disclosure of adjusting frame rate (*see, e.g.,* Ex.1040, 6:10-15) accomplishes nothing required by limitation 1(c) and therefore, Tripathi would not suggest to a POSITA to combine Tripathi with Rosenberg and Nakazawa to meet limitation 1(c). *Id.*

A POSITA would not have been motivated to combine these references for limitation 1(c) because Rosenberg fails to suggest that mimicking a mirror requires anything else in addition to flipping the image and, if anything, teaches away from incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera, Nakazawa does not disclose this optical property at all, and Tripathi is neither directed to capturing an image of a user nor attempting to replicate a mirror experience nor discloses this optical property at all. Ex.2013 ¶ 516.

**3. Tripathi, Alone Or In Combination With
Rosenberg/Nakazawa, Does Not Disclose Limitation 1(h)**

As discussed above in Section V.A. (Ground 1), incorporated herein by reference, neither Rosenberg nor Nakazawa discloses limitation 1(h). Tripathi adds nothing to remedy this failure, and so Ground 3 fails as well, because Tripathi does not disclose varying the rate of performing image processing steps according to distance. Ex.2013 ¶¶ 517-525. 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. Ex.1040, Abstract, 6:10-20. Unlike the 109 Patent, Tripathi is not directed to capturing images at all or transforming them. And unlike limitation 1(h), Tripathi's disclosure for varying the frame rate is based on affirmative user inputs. *See, e.g.*, Ex.1040, 10:40-50, Fig. 13, 11:11-24, Fig. 15, 12:54-67; Ex.2013 ¶ 522. Moreover, a POSITA would understand that this variation in frame rate is not based on the distance to a user as recited by limitation 1(h). Ex.2013 ¶¶ 522-525. Dr. Karam opined, based on Tripathi Figure 11, that Tripathi's disclosure of adjusting frame rate based on the detection of dynamic content constitutes adjusting frame rate based on distance. Ex. 1004, ¶ 223; Ex. 2012, 145:18-146:18, 147:16-148:6. Dr. Karam's opinion is unsupported by the reference. Ex.2013 ¶¶ 522-525. As Dr. Forsyth explains, a POSITA would understand that Figure 11 of Tripathi refers solely to adjusting frame rate based on the dynamic properties of the content to be displayed. The POSITA is presumed to have read

Tripathi, where the POSITA would find in a column 6, lines 29-39 examples of (a) the kind of dynamic content variations the device should respond to and (b) the kind of ‘user input signal’ the device should respond to. Tripathi is clear that the user provides explicit signals. There is no support in Tripathi for the idea that variation in frame rate is based on distance to a user, and Figure 11 certainly does not support this idea. Ex.2013 ¶¶ 522-525. Tripathi discloses that frame rate may, in general, be adjusted based on (1) type of display content to be displayed (e.g., static or dynamic); (2) user-input signals (e.g., swipe, pinch, tap); (3) device power supply status; (4) other aspects of device operation. *See, e.g.*, Ex. 1040, Abstract, 1:52-59, 5:42-51, 5:58-6:3, 6:29-39. The only expressly user-related category is affirmative user actions – “user-input signals”. *See, e.g.*, 6:35-37. Any argument that varying the rate based on distance rather than affirmative user commands would have been obvious to a POSITA reading Tripathi is impermissibly based on hindsight bias. *In re Gartside*, 203 F.3d at 1319; *In re Dembiczak*, 175 F.3d at 999. Ex.2013 ¶¶ 522-525.

4. Petitioners Fail to Show Motivation to Combine Rosenberg, Nakazawa, and Tripathi for Limitation 1(h)

As discussed above in Section V.A. (Ground 1) incorporated herein by reference, Petitioners have failed to show unpatentability of Claim 1 based on Rosenberg and Nakazawa, including for limitation 1(h). A POSITA would not have been motivated to combine Rosenberg and Nakazawa with Tripathi for limitation

1(h) because none of these references, alone or in combination, disclose limitation 1(h) and even assuming motivation to combine, which there is not, the limitation would not be met. Ex.2013 ¶¶ 526-535. Furthermore, it would not have been obvious to a POSITA to vary the rate based on distance and any suggestion that it would have been obvious is impermissibly based on hindsight. *Id.*

Additionally, unlike Rosenberg, Nakazawa, and the 109 Patent which are focused on capturing images of the user and the viewing experience of the user, 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. Ex.1040, Abstract, 6:10-20. A POSITA would regard Tripathi to be unlike the 109 Patent, Rosenberg, and Nakazawa in both its subject matter and technical approach. Ex.2013 ¶ 530. Petitioners contend that a POSITA would have been motivated to combine Rosenberg and Tripathi because Rosenberg “seeks to reduce power consumption.” Pet. at 54. But the passages from Rosenberg that Petitioners cite to concern a low-power idle mode for when the user is *not* present. *See, e.g.*, Ex.1005, ¶¶0025, 0032, 0033, 0069, 0070, 0071, 0072. Conversely, Tripathi’s solution is directed to varying the frame when the display device is in use: “The variable frame rate may be actively determined *during operation* of device 10 based on whether static or dynamic display content is to be displayed”. Ex.1040 at 6:10-12. In short, unlike Tripathi, Rosenberg’s solution to power consumption is to reduce power

when the user is *not* present by putting the display in an idle or off mode and there is no suggestion in Rosenberg that other solutions to power consumption are desirable. This difference would have not suggested to a POSITA to combine these references to meet limitation 1(h). Ex.2013 ¶ 531.

Unlike limitation 1(h), Tripathi's disclosure for varying the frame rate is based on affirmative user inputs. *See, e.g.*, Ex.1040, 10:40-50, Fig. 13, 11:11-24, Fig. 15, 12:54-67; Ex.2013 ¶¶ 526-535. Moreover, this variation in frame rate is not based on the distance to a user as recited by limitation 1(h). A POSITA would not have been motivated to combine Rosenberg and Nakazawa with Tripathi as to limitation 1(h) simply because none of the references even suggests the varying required by this limitation. *Id.*

At least because Petitioners have not shown that the Ground 3 references establish unpatentability of Claim 1, this Ground also fails for Claims 2-6, 8, and 17, each of which depends from Claim 1. Moreover, the same failure of proof regarding Petitioners' own construction of "appears to mimic a mirror" provides an additional basis to find Claims 2, 3, 4, 5, and 6 not unpatentable. Each of these claims recites an additional requirement of the "transformation mapping" that is applied so that the image "appears to mimic a reflection of a mirror." *See, e.g.*, Ex.1001 Claim 2 ("wherein the transformation mapping renders an image appearing to have been taken from a camera positioned at eye-level height and pointing horizontally");

Claim 3 (“transformation mapping comprises at least a tilt transformation and an elevation transformation”). As with Claim 1, Petitioners do not contend, let alone demonstrate, that the Ground 3 references, alone or in combination, disclose that these additional transformations would achieve the specific “double distance, same size” requirements of Samsung’s own construction, or how they would. They do not disclose those requirements. This is again a failure of proof.

D. Grounds 4-25: Petitioners Fail To Show Unpatentability Of The Dependent Claims

Each of Grounds 4-25 contend that one or more dependent claims of the 109 Patent should be found unpatentable in view of either the Ground 1, Ground 2, or Ground 3 references in combination with a set of additional references – Hatanaka (Ground 4), Iwai (Grounds 5-7), Kubota (Grounds 8-10), Cho (Grounds 11-13), Park (Grounds 14-16), Kuranov (Grounds 17-19), Chang (Grounds 20-22) and Lizee (Grounds 23-25). Pet. at 2-4, 56-89.

However, for these Grounds, Petitioners do not contend that any of the additional references, either alone or in combination with the Ground 1, 2, or 3 references, disclose or render obvious any element of Claim 1, from which all the other challenged claims depend – including limitations 1(c) and 1(h). Pet. at 56-89. Petitioners’ arguments for these Grounds are directed exclusively to how the additional reference, alone or in combination, would purportedly render obvious the additional limitations of the dependent claim. *Id.* For the limitations of Claim 1,

Petitioners rely on Grounds 1, 2, or 3, without reference to the additional art. This alone is fatal to Grounds 4-25, because Petitioners have failed to show that Grounds 1, 2, or 3 establish the unpatentability of Claim 1. As discussed above for Ground 1, incorporated herein by reference, Petitioners have failed to show unpatentability of Claim 1 based on Rosenberg and Nakazawa. Ex.2013 ¶¶ 430-464. And as discussed above for Ground 2, incorporated herein by reference, Petitioners have failed to show unpatentability of Claim 1 based on Rosenberg, Nakazawa, and Hatanaka. Ex.2013 ¶¶ 465-498. And as discussed above for Ground 3 incorporated herein by reference, Petitioners have failed to show unpatentability of Claim 1 based on Rosenberg, Nakazawa, and Tripathi. Ex.2013 ¶¶ 499-535. Because Petitioners have failed to demonstrate unpatentability of Claim 1 under any Ground, none of Grounds 4-25 (which rely on Grounds 1-3 for Claim 1) can establish the unpatentability of any dependent claim. Moreover, as explained by Dr. Forsyth, because none of the additional references relied upon by Petitioners for Grounds 4-25 disclose either limitation 1(c) or 1(h), a POSITA would not be motivated to combine any of them with the Ground 1, 2, or 3 references to achieve the dependent claims in any event. Ex.2013 ¶¶ 93-429.

VI. CONCLUSION

None of Petitioners' grounds establish the unpatentability the challenged claims. The challenged claims of the 109 Patent should be found not unpatentable.

Dated: March 6, 2025

Respectfully submitted.

/John C. Pierce/

John Pierce
Tensegrity Law Group LLP
USPTO Reg. No. 79,938
1676 International Drive
Suite 910
McLean, VA 22102
Telephone: 865-388-5914
Facsimile: 650-802-6001
Email: john.pierce@tensegritylawgroup.com

Matthew D. Powers, *pro hac vice pending*
William P. Nelson, *pro hac vice pending*
Natasha M. Saputo, *pro hac vice pending*
Tensegrity Law Group LLP
555 Twin Dolphin Drive, Suite 650
Redwood Shores, CA 94065
Telephone: 650-802-6000
Facsimile: 650-802-6001
Email:
matthew.powers@tensegritylawgroup.com
william.nelson@tensegritylawgroup.com
natasha.saputo@tensegritylawgroup.com
eyesmatch_team@tensegritylawgroup.com

CERTIFICATION OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(b)(1) and (d), the undersigned hereby certifies that the Patent Owner's Preliminary Response complies with the type-volume limitation 37 C.F.R. § 42.24(b)(1) permitting a response of up to 14,000 words because, exclusive of the exempted portions, the response contains 13,849 words, as identified by Microsoft Word's word-counting feature.

Dated: March 6, 2025

Respectfully submitted.

/John C. Pierce/

John Pierce
USPTO Reg. No. 79,938
Tensegrity Law Group LLP
1676 International Drive
Suite 910
McLean, VA 22102
Telephone: 865-388-5914
Facsimile: 650-802-6001
Email: john.pierce@tensegritylawgroup.com
eyesmatch_team@tensegritylawgroup.com

*Attorneys for Patent Owner
EyesMatch Ltd.*

CERTIFICATION OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

The undersigned hereby certifies that on March 6, 2025, copies of the foregoing were served via Electronic Mail to the following:

<u>Lead Counsel</u>	<u>Backup Counsel</u>
Erika H. Arner (Reg. No. 57,540) Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 1875 Explorer Street Suite 800 Reston, VA 20190-5675 Tel: 571-203-2754 Fax: 202-408-4400 erika.arner@finnegan.com	Sydney R. Kestle (Reg. No. 78,725) Angeline L. Premraj (Reg. No. 80,472) Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue, NW Washington, DC 20001 (202) 408-4000 sydney.kestle@finnegan.com angeline.premraj@finnegan.com Xirui Zhang (Reg. No. 78,809) Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Two Seaport Lane Boston, MA 02210 (617) 646-1600 xirui.zhang@finnegan.com Kara A. Specht (Reg. No. 69,560) Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 271 17th Street, NW, Suite 1400 Atlanta, GA 30363-6209 Tel: 404-653-6400 Fax: 404-653-6444 kara.specht@finnegan.com Eliot D. Williams (Reg. No. 50,822) Baker Botts L.L.P. 700 K Street, N.W. Washington, DC 20001 (202) 639-1334

	DLBBSamsungEyesmatch @BakerBotts.com Neil Sirota, (Reg. No. 38, 306) Margaret M. Welsh (Reg. No. 70, 745) Chun Xu (Reg. No. 800, 021) Pallavi Mathur (Reg. No. 80, 102) Baker Botts L.L.P. 30 Rockefeller Plaza New York, NY 10112 (212) 408-2500 DLBBSamsungEyesmatch@BakerBotts.com Jose Villarreal (Reg. No. 43, 969) Baker Botts L.L.P. 401 South 1st Street Austin, TX 78704 (512) 322-2500 DLBBSamsungEyesmatch@BakerBotts.com
--	---

/John C. Pierce/

John C. Pierce
USPTO Reg. No. 79,938
Tensegrity Law Group LLP
1676 International Drive
Suite 910
McLean, VA 22102
Telephone: 865-388-5914
Facsimile: 650-802-6001
Email: john.pierce@tensegritylawgroup.com