

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hisense USA Corporation
Petitioner

v.

Brightplus Ventures LLC
Patent Owner

Patent No. 8,177,382
Filing Date: March 11, 2008
Issue Date: May 15, 2012
Title: APPARATUS AND METHODS FOR MULTIPLANAR OPTICAL
DIFFUSERS AND DISPLAY PANELS FOR USING THE SAME

Inter Partes Review No. IPR2023-01311

PETITIONER'S REPLY TO PATENT OWNERS' RESPONSE

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LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
1001	U.S. Patent No. 8,177,382 (“the ’382 Patent”)
1002	Prosecution History of U.S. Patent No. 8,177,382
1003	Declaration of Morgan Pattison, Ph.D.
1004	Curriculum Vitae of Morgan Pattison, Ph.D.
1005	JP 2007-329016 to Kobayashi (“Kobayashi”)
1006	Certified Translation of Kobayashi
1007	US 2007/0103908 to Tabito <i>et al.</i> (“Tabito”)
1008	US 2006/0050198 to Kirita <i>et al.</i> (“Kirita”)
1009	US 2005/0243551 to Onishi <i>et al.</i> (“Onishi”)
1010	US 2005/0024754 to Epstein <i>et al.</i> (“Epstein”)
1011	WO 2008/025909 to Schiavoni <i>et al.</i> (“Schiavoni”)
1012	Certified Translation of Schiavoni
1013	US 2002/0071288 to Lim (“Lim”)
1014	Counterclaim filed by Patent Owner in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774, Dkt. 9 (N.D. Ga. Sep. 16, 2022)
1015	Scheduling Order in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774, Dkt. 35 (N.D. Ga.)
1016	Judicial Caseload Profile for the Northern District of Georgia
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1019	Declaration of P. Morgan Pattison, Ph.D. in Response to Patent Owner’s Contingent Motion to Amend
1020	Rough Transcript of the September 6, 2024 Deposition of William K. Bohannon ¹
1021	Oliver Dross, William Parkyn, Julio Chaves, Waqidi Falicoff, Juan Miñano, Pablo Benitez, & Roberto Alvarez, <u>A superior architecture of brightness enhancement for display backlighting</u> , 6338 Proc. of SPIE 63380G-1 (2006).

¹ Petitioner will submit the final transcript when received.

EXHIBIT	DESCRIPTION
1022	Chao-Heng Chien & Zhi-Peng Chen, <u>Fabrication of concentric light guiding plate with SiO₂ reflective film</u> , 6376 Proc. of SPIE 63760E-1 (2006).
1023	Ji-Young Lee, Kie-Bong Nahm, Jae-Hyeon Ko, & Joong Hyun Kim, <u>Effects of Reshaping Micro-pyramids and Prisms on the Optical Performances of Light Collimating Films in the Field of LCD Backlight</u> (2006).
1024	US 7,072,096 to Holman (“Holman ’096”)
1025	Ching-Cherng Sun, Ivan Moreno, Shih-Hsun Chung, Wei-Ting Chien, Chih-To Hsieh, Tsung-Hsun Yang, Brightness Management in a Direct LED Backlight for LCD TVs (2007)
1026	Intentionally Omitted
1027	Intentionally Omitted
1028	Data Sheet for Surface Mount Type by Nichia 2015-1
1029	Technical Data Sheet DS23 Luxeon Star

I. Introduction

The '382 Patent is invalid. Its independent claims describe elements that were known in the art as of the priority date. The Patent Owner (PO) Response ("Response") also misdirects the Board to non-relevant disclosures or attempts to limit the prior art to single embodiments. Further, PO submits no credible expert testimony, instead relying on a declaration that parrots the Response, confirming the futility of PO's flawed arguments.

The challenged claims should all be cancelled as obvious.

II. The Response Parrots Arguments from the Preliminary Response, which the Board Already Rejected

Much of the Response is essentially a word-for-word copy of the Preliminary Response. For example, with respect to Ground 1, *Compare* Response at § V.A with Paper 6 at § V.A; *Compare* Response at § V.B with Paper 6 at § V.B; *Compare* Response at § V.C with Paper 6 at § V.C; *Compare* Response at § V.D with Paper 6 at § V.D; *Compare* Response at § V.H with Paper 6 at § V.H.

Similarly, with respect to Ground 4, *Compare* Response at § VII.A with Paper 6 at § VII.A. With respect to Ground 10, *Compare* Response at § XIV.A with Paper 6 at § XIV.A; *Compare* Response at § XIV. with Paper 6 at § XIV.A; *Compare* Response at § XIV.B with Paper 6 at § XIV.B. And with respect to Ground 7, *Compare* Response at § XI.B with Paper 6 at § XI.B; *Compare* Response at § XI.B with Paper 6 at § XI.B; *Compare* Response at § XI.C with Paper 6 at § XI.C.

The Board rejected these arguments and should not reconsider them, especially where PO's expert "testimony" is largely a word-for-word copy of the Response. *See infra* § XV.

III. Ground 1 - Claims 1-3, 7-9, and 11-15 are Obvious Under 35 U.S.C. § 103 Over Kobayashi in view of the Knowledge of a POSITA

A. Kobayashi Discloses a First Distance From the Plurality of Solid State Emitters and a Second Distance From the Plurality of Solid State Emitters

PO argues that Kobayashi fails to disclose a first distance and second distance as in claim 1 of the '382 Patent. Response at 11-13 and 16-17. To reach this conclusion, PO inserts new language into claim 1, arguing that the first and second distance must be measured from the bottom of the solid-state emitters / top of the support structure. The Board already rejected this exact same argument in the Institution Decision ("ID"). Paper 7 at 13-14. Further, the claim language recites only a first distance "from the plurality of solid state emitters." The claim is not limited to any particular surface, much less a top or bottom surface. Ex. 1020, 56:14-18. Moreover, the specification is consistent with the claim language and defines the distance to "the solid state light emitters" or to a "surface defined by the solid state light emitters," without specifying top or bottom. *See, e.g.*, Ex. 1001, 8:19-21; 8:30-32; 5:62-64; 6:16-18.

The only support PO points to for its argument is a single depiction of the alleged invention in Fig. 3, which merely shows arrows pointing toward the bottom

of the solid state light emitters, but does not give any indication that the distances must be measured from that location. *See* Response at 11. And, in any event, it is improper to limit patent claims to a single embodiment. *See, e.g., Polaris Innovations Ltd. v. Brent*, 48 F.4th 1365, 1375-78 (Fed. Cir. 2022) (finding not proper to limit claim scope to only cover “multiple unpackaged dies within a single package” simply because two figures of the patent showed that embodiment); *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 355 F.3d 1361, 1369 (Fed. Cir. 2004) (similar). Further, PO acknowledged that the claims do not require this limitation in its Motion to Amend where it urges “[b]y specifying that the first diffusion and second diffusion planes are first and second distances from the bottom of the solid state light emitters, respectively, the amendments in proposed substitute claim 22 are narrowing.” Paper 13 at 7. Thus, PO admits that this element is not required by the current claims.

B. Kobayashi Discloses a Diffuser Plate

PO next argues that Kobayashi does not disclose a diffuser plate because the diffusion plate disclosed in Kobayashi has a purportedly low light diffusivity of 0.5 to 30% and may have a Fresnel lens. Response at 13-16.

At the outset, neither the specification nor the claims of the ’382 patent exclude from a “diffuser plate,” a diffusion plate having an alleged “low” light

diffusivity and/or a Fresnel lens. *See generally* Ex. 1001; *see also* Ex. 1020, 68:20-25.

Further, PO provides no support for its claim that the light diffusivity in Kobayashi is low. To the contrary, Kobayashi solves issues with an LED lamp having “less diffused light” and explicitly states that its diffuser plate with a lens is for diffusing light. *See, e.g.*, Ex. 1006, [0012]-[0015]. PO also admits that Kobayashi’s diffusion plate has diffusivity of up to 30%, and acknowledges that Fresnel lenses have use beyond simply collimating light. *See* Response at 14. PO also ignores that Kobayashi does not require a Fresnel Lens, but rather is one of many examples of lens that may be used in the diffusing plate 4. Ex. 1016, [0034]; *see also* Ex. 1020, 108:22-25. And, in any event, the use of a Fresnel Lens would not change the fact that Kobayashi’s *diffusing plate 4* is a *diffuser*. *See, e.g.*, Ex. 1003 ¶47-53; Ex. 1020, 106:5-8.

Finally, PO further argues that “the diffuser of the ’382 Patent is a ‘scattering diffuser’ (Ex. 1001, 5:1-2), which is intended to scatter and spread light emitted therethrough.” But this is not required by the claim, which never recites a “scattering diffuser.” Indeed, the specification is not so limited, describing only that “diffuser plate 140 *may* include a scattering diffuser.” Ex. 1001 at 5:64-66.

C. Kobayashi Discloses a Brightness Enhancing Film

PO argues that Kobayashi's prism collection film is not a brightness enhancing film based on unsupported testimony from its expert, who merely states that "there is no standard definition or description of the term 'prism collection film.'" Ex. 2003, ¶46; *see also* Response at 17.

Yet Dr. Pattison testifies that "the 'prism collection film' is a brightness enhancing film." Ex. 1003, ¶62. And unlike PO's expert testimony, this testimony has clear support in the art. Ex. 1020 at 100:19-103:9 (unable to answer questions). For example, a 2006 paper from the Proceedings of Society of Photo-Optical Instrumentation Engineers ("SPIE") states that "Brightness enhancement of backlighting for displays is typically achieved via crossed micro prismatic films" which "increase[e] the backlight luminance." Ex. 1021 at 1. Thus, a prismatic film, like the prism collection film in Kobayashi, is described as a film for enhancing brightness—in other words, a brightness enhancement film.

Other prior art from the same timeframe describes prism films or sheets in similar terms. *See, e.g.*, Ex. 1022 at 1 ("The prism sheets can collect the diffusive light and make the light emit in a direction perpendicular to the top surface of [the backlight unit]."); Ex. 1023 at 1 ("Micro-lens sheets including prism sheets are used to enhance the on-axis luminance via refraction of rays on the surfaces of micro-

lenses.”). Thus, there is clear evidence supporting Dr. Pattison’s testimony that a prism collection film is a brightness enhancement film. *See* Ex. 1019 at ¶73.

D. Kobayashi Discloses a Second Distance In a Range Between the Third Distance and 1.5 Times the Third Distance

PO argues that Kobayashi does not disclose a second distance in a range between the third distance and 1.5 times the third distance, because in Kobayashi the ratio of the second distance to the third distance is preferably in the range of 0.2 to 1.0, and thus the maximum second distance is equal to the third distance. Response at 18. PO is mistaken.

Kobayashi explicitly discloses a number of valid values of the distance “a” minus the thickness of diffusing plate 5 (i.e., the “second distance”) that is greater than the third distance and less than 1.5 times the third distance “b.” For example, Kobayashi explicitly discloses potential values of “a” to be “10 mm or more” and “b” to be “10 to 100 mm,” and a diffuser sheet that has a thickness of 1-5 mm, preferably 1.5 to 3 mm. Ex. 1006 at [0019]-[0020], [0039]. Even using the largest value for the thickness of the diffuser sheet, here 5 mm, Kobayashi’s disclosed preferred values of “a” and “b” satisfies the claim limitation where the ratio between the second distance and the third distance is between 1 and 1.5. As one example using explicitly disclosed values from Kobayashi’s ranges, when “a” is 19 mm and “b” is 13 mm, the ratio is $19 \text{ mm} - 5 \text{ mm} / 13 \text{ mm} = 1.07$, which falls directly in the claimed range.

Kobayashi's characterizing of the range of 0.2 to 1.0 as a *preferred* embodiment further confirms Kobayashi also contemplates other values outside the *preferred* embodiment. Ex. 1006 at [0020]. Further, “the ordinary meaning of ‘between’ is ‘in the time, space or interval that separates’” such that, for example, “[t]he space or interval that separates 5 and 15 includes numbers greater than *or equal to* 5, and lesser than *or equal to* 15.” *In re Fenofibrate Pat. Litig.*, 910 F. Supp. 2d 708, 712 (S.D.N.Y. 2012), *aff'd*, 499 F. App'x 974 (Fed. Cir. 2013). Based on this principle, because Kobayashi explicitly discloses a second distance equal to the third distance, Kobayashi discloses a second distance in a range between the third distance and 1.5 times the third distance.

Even if a second distance in a range between the third distance and 1.5 times the third distance did not include numbers greater than or equal to the third distance and lesser than or equal to 1.5 times the third distance, a distance of 1.000001 the third distance *would* be within the claimed range. The distinction between 1 and 1.0000001 is so minute that it would not be patentable. *See, e.g., Haynes Int'l, Inc. v. Jessop Steel Co.*, 8 F.3d 1573, 1577 n. 3 (Fed. Cir. 1993) (“[W]hen the difference between the claimed invention and the prior art is the range or value of a particular variable, then a *prima facie* rejection is properly established when the difference in range or value is minor.”); *Barrott v. Drake Casket Co.*, 187 F. Supp. 284, 290 (W.D. Mich. 1960), *aff'd*, 297 F.2d 934 (6th Cir. 1962) (similar).

That there is no meaningful difference when the distance is 1.000001 times the third distance is demonstrated by the '382 Patent's specification which states, for example, that "[i]n some embodiments, the solid state emitters include a third distance between adjacent ones of the solid state light emitters and the second distance includes a distance *in a range between* the third distance and 1.5 times the third distance." Ex. 1001, 2:8-12 (emphasis added). The specification then repeatedly used the terms "approximately" and "substantially" to describe the range. *Id.*, 2:53-58, 6:28-30, 8:41-43. The specification thus confirms that the specific numerical value, whether 0.9, 1.0, 1.1, do not impart any meaningful limitations on the claimed range.

Further, nothing in the claim language requires that the second distance be measured from the bottom surface of the diffuser, such that the thickness of the diffusion plate 5 must be subtracted from the distance "a." Ex. 1020, 44:16-25; 53:12-16; 55:18-56:1. Rather, the claim language merely recites that the second distance is to the "second diffusion plane." Thus, the claim may be understood to define a second distance to the diffusion plane where the claimed distance is not limited to being defined by a particular side or point of the second diffusion plane. Ex. 1020, 46:5-23. Kobayashi's distance "a," which is measured to "the light emitting surface of the diffusing plate at the most exiting side," is therefore the claimed second distance and it is not necessary to subtract the thickness of the

diffusion plate 5 to get the second distance. Thus, Kobayashi explicitly discloses a 1:1 ratio between second distance “a” and third distance “b”. *See* Ex. 1006 at [0019]-[0020] (describing potential values of “a” to be “**10** mm or more” and “b” to be “**10** to 100 mm”) (emphasis added).

Dr. Pattinson also explains that there are a number of reasons why a POSITA would have been motivated to make the second distance slightly larger to be greater than the third distance. These examples include cost savings and because doing so was already known in the art. Ex. 1003, ¶71. PO’s expert argues that a POSITA would not be motivated to make such a change because it might increase the thickness of the backlight. But this ignores the fact that, as explained by Dr. Pattison, thickness may actually be a reason a POSITA would be “motivated to explore different distances of the multiple diffuser arrangement.” *Id.*

For example, in an arrangement where the LEDs are spaced a little closer together, giving a ratio of the second distance to the third distance that is greater than one, Kobayashi explains that one potential drawback is that one needs more LEDs, which increases cost and energy consumption. Ex. 1006, [0013]-[0014]. However, as Dr. Pattison explains, one could trade-off closer spacing with different diffusers and although there might be slightly higher LED costs (but more light output), one may benefit from increased manufacturing and sourcing efficiency. Ex. 1019, ¶¶28-36.

Finally, PO has acknowledged that the claims do not require this limitation by attempting to further limit its claims to recite the point of measurement in its Motion to Amend, admitting that “the addition of the claim limitation ‘wherein the second distance comprises a distance greater than the third distance and less than 1.5 times the third distance’ [] further limits the claim’s scope to require the second distance to comprise a distance more than the third distance and less than 1.5 times the third distance.” Paper 13 at 7. Thus, PO has acknowledged that this element is not required by the current claims.

E. Kobayashi Discloses a “means for transmitting first diffused light from the first diffusion plane to the second diffusion plane” of Claim 11

PO next argues that Kobayashi does not disclose a means for transmitting “first diffused light.” Response at 18-19. As discussed above in Section III.B, Kobayashi’s diffusing plate 4 transmits diffused light.

F. Kobayashi Discloses a Structured Refractive Diffuser Plate

PO argues that Kobayashi does not disclose a structured refractive diffuser plate because Kobayashi only discloses refractivity of diffusing agents inside the diffusing plates, which involve lenses, and does not disclose any refractive structure. Response at 19-21.

However, Kobayashi explicitly states that the lenses on its diffusing plate may be structured as prisms, pyramids, and other similar structures. Ex. 1006, [0034]; Ex.

1020, 108:22-25. These structures are the same as the refractive structures disclosed in the '382 Patent, including the pyramid refractive structures shown in Figure 6A.

G. Kobayashi Discloses a Third Distance

See supra, § III.A.

H. Kobayashi Renders Claims 2-3, 12, and 14-15 Obvious

PO provides no other arguments with respect to claims 2-3, 12, and 14-15 other than the arguments advanced relative to claims 1 and 13. Thus, claims 2-3, 12, and 14-15 fall together with claims 1 and 13.

IV. Ground 2 - Claims 10 and 16 are Obvious Under 35 U.S.C. § 103 Over Kobayashi and Kirita in view of the Knowledge of a POSITA

PO argues that the combination of Kobayashi and Kirita does not render obvious dependent claims 10 and 16 because Kirita does not disclose any of the elements of independent claims 1 and 13 which are absent from Kobayashi. Response at 21-22. However, the Petition does not rely on Kirita with respect to any elements of claims 1 and 13, and therefore PO never presents any substantive argument that claims 10 and 16 are not obvious.

PO also argues there is no motivation to combine because Kirita is directed to an LCD display using a CFFL light source. But this is wrong. Kirita discloses the use of CFFL *and LED light sources*. Ex. 1008, [0010] and [0126]. Moreover, Kirita is directed to improving color reproduction and discusses many of the same characteristics of lighting displays, such as light uniformity and brightness, as

Kobayashi. Similarly, both references employ the same or similar structures, including diffusion sheets, reflectors, prism sheets, and LED light sources. *See, e.g.*, Ex. 1008, [0010]-[0011] and Ex. 1006, Claim 1, [0043]. For at least these reasons, a POSITA would have been motivated to combine Kobayashi and Kirita. *See, e.g.*, Petition at 27-29; Ex. 1003, ¶¶94-96.

V. Ground 3 - Claim 8 is Obvious Under 35 U.S.C. § 103 Over Kobayashi and Lim in view of the Knowledge of a POSITA

PO argues that the combination of Kobayashi and Lim does not render obvious dependent claim 8, because Lim does not disclose any of the elements of independent claims 1 and 13 which are absent from Kobayashi. Response at 22. However, the Petition does not rely on Lim with respect to any elements of claims 1 and 13. Thus, PO has made no real argument that claim 8 is not obvious. Further, a POSITA would have readily combined Lim's teachings with Kobayashi for at least the reasons that both relate to the same type of direct backlight displays and are directed at improving lighting characteristics. *See* Petition 31-32.

VI. Ground 4 - Claims 4 and 17 are Obvious Under 35 U.S.C. § 103 Over Kobayashi and Tabito in view of the Knowledge of a POSITA

A. A POSITA Would Be Motivated to Combine Tabito with Kobayashi

PO argues that a POSITA would not be motivated to combine the diffuser mounting structure of Tabito with the backlight structure of Kobayashi because it would result in different lighting characteristics. Response at 22-25.

The ID rejected this argument. *See* Paper 7 at 38. The ID also comports with Dr. Pattinson’s testimony that combining Tabito’s supports with the system in Kobayashi would “provide a more rigid mounting and support for the backlighting elements.” Ex. 1003, ¶99; *see also* Ex. 1019, ¶¶61-64.

Regardless, the purpose of Tabito’s optical studs is not to absorb and diffuse light as PO’s expert “assume[s]” and PO misapprehends, but to provide support for the structure. *See, e.g.*, Ex. 1007, [0093]; Ex. 2003, [0068]; Ex. 1003, ¶78-80, 99. It is the “plates” in Tabito that “are precisely positioned ... to realize conduction, diffusion or reflection of the illuminating light.” Ex. 1007, [0095]. Thus, while the optical studs are made of out a material with some conductivity, this merely prevents the plates from being “partially illuminated” due to the studs’ presence. *Id.*, [0095].

Moreover, PO’s reliance on the Kobayashi’s data in Table 1 is misplaced. Kobayashi’s test system uses only two LEDs and was not designed to replicate a full array of LEDs in a lighting panel. Ex. 1006, [0046]. As Tabito confirms, the stud placement is at intervals greater than between each LED. *See, e.g.*, Figure 3 of Tabito (annotated):

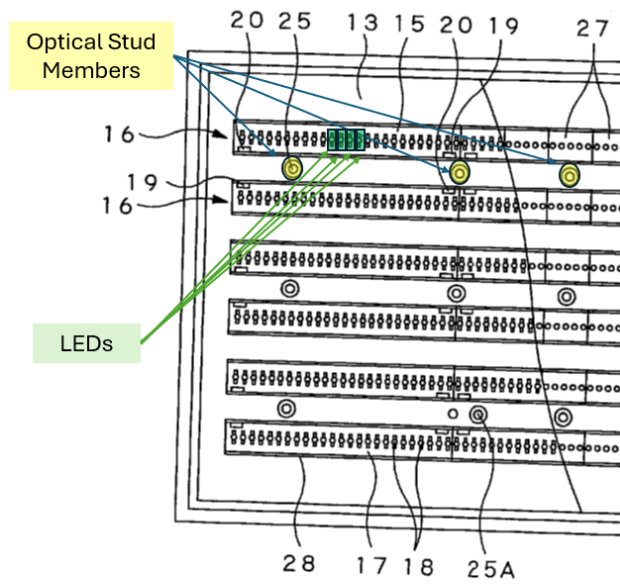


FIG. 3

Thus, PO's contention that using Tabito's studs would totally change operation of the backlight unit is wrong. *See* Ex. 1003, ¶¶98-100.

PO also argues that “[i]t is not reasonable to assume that there would be an *optimal* relationship, in terms of backlight performance, between the two distances (b and c) in Kobayashi when optical studs are present” so “a POSITA would not be motivated to combine Tabito with Kobayashi.” Response at 33-34. (emphasis added). However, “[i]t’s not necessary to show that a combination is the *best* option, only that it be a *suitable* option.” *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (emphasis in original) (citing *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021)). A POSITA would be motivated to combine Tabito and Kobayashi.

B. Dependent Claims 4-6

PO argues that Tabito does not disclose any elements of independent claim 1 which are absent from Kobayashi, but provides no substantive argument regarding Tabito's disclosures of the elements in claims 4-6. Thus, PO does not dispute that Tabito discloses these elements, and renders dependent claims 4-6 obvious in combination with Kobayashi. Petition at 34-38.

C. Independent Claim 17

PO argues that Kobayashi in view of Tabito does not disclose any elements of independent claim 17. PO's arguments fail. *See supra*, §§ III and IV.A.

VII. Ground 5 - Claims 18 and 20 are Obvious Under 35 U.S.C. § 103 Over Kobayashi, Tabito, and Onishi in view of the Knowledge of a POSITA

PO argues that the combination of Kobayashi, Tabito, and Onishi does not render obvious dependent claims 18 and 20, because Onishi does not disclose any of the elements of independent claim 1 which are absent from Kobayashi and Tabito. Response at 27. However, the Petition does not rely on Onishi with respect to any elements of claim 1, and PO makes no real argument that claims 18 and 20 are not obvious over the combination of Kobayashi, Tabito, and Onishi.

To the extent PO argues that Onishi would not be combined with Kobayashi and Tabito, PO is wrong. Onishi is directed at reducing "lamp image." Ex. 1009, [0012]. Kobayashi and Tabito are directed at the same thing. Ex. 1006, [0012]; Ex. 1007, [0008]. Furthermore, a POSITA would have been motivated to implement

Onishi's teachings regarding its extrusion structures with Kobayashi's diffusing plate to improve the total light transmittance of the diffusion plane. Petition at 41-42; *see also* Ex. 1004, ¶103-104.

VIII. Ground 6 - Claim 19 is Obvious Under 35 U.S.C. § 103 Over Kobayashi, Tabito, Onishi, and Epstein in view of the Knowledge of a POSITA

PO argues that the combination of Kobayashi, Tabito, Onishi, and Epstein does not render obvious dependent claim 19, because Epstein does not disclose any of the elements of independent claim 1, which are absent from Kobayashi, Tabito, and Onishi. Response at 28. However, the Petition does not rely on Epstein with respect to any elements of claim 1. PO makes no real argument that claim 19 is not obvious over the combination of Kobayashi, Tabito, Onishi, and Epstein.

Further, a POSITA would have been motivated to apply the teachings of Epstein to the prior art of Ground 6 because all the references relate to backlight display systems and are directed to improving the uniformity and brightness of light. Ex. 1003, ¶108-111.

IX. Ground 7 - Claims 1-2, 7-8, and 11-15 are Obvious Under 35 U.S.C. § 103 Over Schiavoni and Lim in view of the Knowledge of a POSITA

A. A POSITA Would Be Motivated to Combine Schiavoni and Lim

PO argues that a POSITA would not be motivated to combine Schiavoni with Lim, because Schiavoni's LEDs are used to make white light, whereas Lim's LEDs are used for R-G-B. Response at 28-29. However, PO and its expert provide no basis

for this contention. Indeed, Lim’s spacing relationship was known in the art, and it would have been within the skillset of a POSITA to modify Schiavoni to account for Lim’s spacing considerations. Ex. 1003, ¶115. Regardless, the claims of ’382 Patent only require “light emitters” – *not* any specific color of light emitter. *See* Ex. 1019, ¶¶68-70; Ex. 1020, 16:13-17; 19:8-12; 29:10-21; 37:10-18.

B. Schiavoni Discloses a Diffuser

PO argues that Schiavoni does not disclose a diffuser because the optical system it discloses is used to ensure light sources do not mix. Response at 29-31. Schiavoni states, however, that its optical system has “diffusing areas” that are intended to “let the wavelengths of the visible domain pass while diffusing the light.” Ex. 1012 at 18. The sectorization PO discusses is to “homogeniz[e] the normal luminance out of the diffuser.” *Id.* at 5; Ex. 1020, 127:10-17. Thus, the optical element diffuses light, and the sectorization is merely a method of controlling the diffusion that occurs, to create a “combined function[]” for the optical system— *not* preventing diffusion altogether. *Id.* at 6; *see also* Ex. 1019, ¶71-72.

C. Schiavoni and Lim Disclose a Third Distance and a First Distance that is a Function of the Third Distance

PO first argues that Schiavoni does not disclose a diffuser so there can be no claimed first distance. However, Schiavoni does disclose a diffuser. *See supra*, § IX.B. Further, it is not a requirement of the ’382 Patent that the first distance be measured from the *bottom* of the light emitters. *See supra*, § III.A.

PO goes on to claim that Lim fails to meet this element because its invention is for a different purpose than the '382 Patent's invention. Response at 32-34.

However, Lim seeks to “provide a backlight unit for an LCD device that provides good brightness and thin thickness” and solve an issue with conventional backlighting units where “each interval between the lamps having the same color is so far that it is impossible to avoid leaving a long distance between a backlight and a diffusion plate to maintain uniform brightness.” Ex. 1013, [0020], [0024]. These goals track those in the '382 Patent.

D. Each of Element 13B, 13F, and the Dependent Claims are Disclosed by Schiavoni and Lim

PO argues that Schiavoni and Lim in view of POSITA fails to disclose claim elements 13B, 13F, and dependent claims 2, 7-8, 11-12, and 14-15. For the reasons explained above, and set forth in the Petition, PO is wrong. *See supra*, § IX.A-C. PO does not provide any substantive argument that the elements of the dependent claims are not disclosed by Schiavoni and/or Lim and thus admits the elements of these claims are disclosed by the combination.

X. Ground 8 - Claim 9 is Obvious Under 35 U.S.C. § 103 Over Schiavoni, Lim, and Kobayashi in view of the Knowledge of a POSITA

A. A POSITA Would Be Motivated to Combine Schiavoni, Lim, and Kobayashi

PO argues that a POSITA would not be motivated to combine Schiavoni and/or Kobayashi with Lim, because Schiavoni's LEDs are used to make white light,

whereas Lim's LEDs are used for R-G-B. Response at 35. This argument fails for the same reasons discussed with respect to motivation to combine in Ground 7. *See supra*, § IX.A.

B. Schiavoni, Lim, and Kobayashi Disclose a Second Distance in a Range Between the Third Distance and 1.5 Times the Third Distance."

See supra, § III.D.

XI. Ground 9 - Claims 10 and 16 are Obvious Under 35 U.S.C. § 103 Over Schiavoni, Lim, and Kirita in view of the Knowledge of a POSITA

A. A POSITA Would Be Motivated to Combine Schiavoni, Lim, and Kirita

PO argues that a POSITA would not be motivated to combine Schiavoni and/or Kirita with Lim, because Schiavoni's LEDs are used to make white light, whereas Lim's LEDs are used for R-G-B. Response at 36. This argument fails for the same reasons discussed with respect to motivation to combine in Ground 7. *See supra*, § IX.A.

B. Schiavoni, Lim, and Kirita Render Obvious Dependent Claims 10 and 16

PO argues that the combination of Schiavoni, Lim, and Kirita does not render obvious dependent claims 10 and 16, because Kirita does not disclose any of the elements of independent claims 1 and 13 which are absent from Schiavoni and Lim. Response at 37. However, the Petition does not rely on Kirita with respect to any

elements of claims 1 and 13. Thus, PO has made no real argument that Claims 10 and 16 are not obvious over the combination of Schiavoni, Lim, and Kirita.

XII. Ground 10 - Claims 4 and 17 are Obvious Under 35 U.S.C. § 103 Over Schiavoni, Lim, and Tabito in view of the Knowledge of a POSITA

A. A POSITA Would Be Motivated to Combine Schiavoni, Lim, and Tabito

PO argues that a POSITA would not be motivated to combine Tabito and Schiavoni because it would be unworkable to insert Tabito's diffuser supports through Schiavoni's glass optical element/system, and Tabito's diffuser supports would disrupt the triangular grooves of Schiavoni, making the system less effective. Response at 37-38.

Yet Schiavoni discloses that its optical element consists of *plastic or glass*. Ex. 1012 at 18. Indeed, the ID states that "Schiavoni does not require its optical element 100 or diffusing layer 22 to be made of glass...." Paper 7 at 63. And even if Schiavoni's optical element *was* required to be made of glass, "an ordinarily skilled artisan would have made any necessary modifications...." *Id.* This is particularly apparent where both Tabito and Schiavoni disclose a similar arrangement of LED arrays over a wide area. *Compare* Ex. 1007, Fig. 3 *with* Ex. 1012, Fig. 2a and b.

PO's argument that Tabito's diffuser supports would disrupt the triangular grooves of Schiavoni is similarly lacking in support. Indeed, PO's expert does not

even mention this point in his declaration. *See* Ex. 2003. Further, even if this were the case, as the ID stated, “relative advantages (e.g., providing a way to support optical elements) and disadvantages (e.g., ‘reducing the efficacy of the optical system’) of modifying Schiavoni’s system to include Tabito’s diffuser supports amount to a tradeoff, a decision well within the level of an ordinarily skilled.” Paper 7 at 64; *see also* Ex. 1003, ¶128-129 and Ex. 1019, ¶63-64.

B. Schiavoni, Lim, and Tabito Disclose Diffuser Supports Configured to Support a Diffuser Plane Structure

PO argues that Schiavoni, Lim, and Tabito do not disclose diffuser supports as in the claims, because the ’382 Patent diffuser supports are mounted on the support structure, while the diffuser supports of Tabito (optical stud member 25) are inserted through the support structure.

PO’s argument is based solely on Figure 5B of the ’382 Patent, and not on any actual claim language. The ID recognizes that “[t]he claim language says nothing about mounting the diffuser supports themselves, let alone mounting them on a support structure.” Paper 7 at 64. Further, the ’382 Patent specification recognizes that there may be different configurations of these elements. *See* Ex. 1001, 7:36–40. There is no disclosure in the patent that states the supports cannot go through the support structure, and it is improper to limit the patent claims to one drawn embodiment of the invention without any support in the claims or specification. *See*,

e.g., Polaris Innovations Ltd., 48 F.4th at 1375-78; *Liquid Dynamics Corp.*, 355 F.3d at 1369.

C. Dependent Claims 4-6

PO argues that dependent claims 4-6 are not obvious for the same reasons PO argues that Schiavoni and Lim do not render independent claim 1 is not obvious. PO is wrong. *See supra*, § IX.A.

To the extent that PO is arguing that Tabito would not be combined with Schiavoni and Lim, PO is also wrong. *See supra*, § XII.A.

XIII. Ground 11 - Claims 18 and 20 are Obvious Under 35 U.S.C. § 103 Over Schiavoni, Lim, Tabito, and Onishi in view of the Knowledge of a POSITA

PO first argues that there is no motivation to combine Schiavoni, Tabito, and Onishi, with Lim. Response at 41. PO provides no support for this argument and it should be disregarded.

PO next argues that the combination of Schiavoni, Lim, Tabito, and Onishi, does not render obvious dependent claims 18 and 20 because Onishi does not disclose any of the elements of independent claim 1 which are absent from Schiavoni, Lim, and Tabito. *Id.* However, the Petition does not rely on Onishi with respect to any elements of claim 1. Thus, PO has made no real argument that claims 18 and 20 are not obvious over the combination of Schiavoni, Lim, Tabito, and Onishi.

XIV. Ground 12 - Claim 19 is Obvious Under 35 U.S.C. § 103 Over Schiavoni, Lim, Tabito, Onishi, and Epstein in view of the Knowledge of a POSITA

PO first argues that there is no motivation to combine Schiavoni, Tabito, Onishi, and Epstein with Lim. Response at 42. PO provides no support for this argument and it should be disregarded.

PO also argues that the combination of Schiavoni, Lim, Tabito, Onishi, and Epstein does not render obvious dependent claim 19 because Epstein does not disclose any of the elements of independent claim 1 which are absent from Schiavoni, Lim, Tabito, and Onishi. *Id.* However, the Petition does not rely on Epstein with respect to any elements of claim 1. Thus, PO has made no real argument that claim 19 is not obvious over the combination of Schiavoni, Lim, Tabito, Onishi, and Epstein.

XV. PO's Purported Expert is Entitled to No Weight

PO submits a declaration from its expert, Mr. Bohannon. *See* Ex. 2003, (the “Bohannon Declaration”). The Bohannon Declaration is fundamentally suspect because Mr. Bohannon simply parrots the Response. The Bohannon Declaration should not be entitled any weight. *Compare* Response at 13-14 *with* Ex 2003, ¶45, 59; *Compare* Response at 23-24 *with* Ex 2003, ¶68; *Compare* Response at 28-29 *with* Ex 2003, ¶69; *Compare* Response at 37-38 *with* Ex 2003, ¶74-75.

The Board has consistently recognized that a declaration that repeats a Paper *verbatim* “is conclusory and unsupported, adds little to the conclusory assertion for

which it is offered to support, and is entitled to little weight.” *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, at 15 (P.T.A.B. Aug. 24, 2022); *see also MarkForged Inc. v. Continuous Composites, Inc.*, IPR2022-01431, Paper 7, at 14 (P.T.A.B. Jan. 18, 2023); *LG Elecs. Inc. v. Jawbone Innovations, LLC*, IPR2023-01111, Paper 10, at 15 (P.T.A.B. Jan. 9, 2024).

XVI. Conclusion

Claims 1-20 of the '382 Patent are invalid.

Respectfully submitted,

By: /s/ Matias Ferrario
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CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24(d) that the foregoing **PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE** excluding any table of contents, mandatory notices, certificates of service or word count, or appendix of exhibits or claim listing, contains 5,567 words according to the word-processing program used to prepare this paper (Microsoft Word). The foregoing word count complies with the 5,600 word type-volume limit specified by 37 C.F.R. § 42.24(c)(1).

Dated: September 13, 2024

By: /s/ *Matias Ferrario*
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the date below a copy of this
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