

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. 7,690,812
Filing Date: March 15, 2007
Issue Date: April 6, 2010
Title: APPARATUS AND METHODS FOR CONFORMABLE DIFFUSE
REFLECTORS FOR SOLID STATE LIGHTING DEVICES

Inter Partes Review No. IPR2023-01385

PETITIONER'S REPLY TO PATENT OWNERS' RESPONSE

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LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
1001	U.S. Patent No. 7,690,812 (“the ’812 Patent”)
1002	Prosecution History of U.S. Patent No. 7,690,812
1003	Declaration of P. Morgan Pattison, Ph.D.
1004	Curriculum Vitae of P. Morgan Pattison, Ph.D.
1005	US 7,497,592 to Chou (“Chou”)
1006	US 2006/0262310A1 to Starry (“Starry”)
1007	US 2007/0103908 to Tabito <i>et al.</i> (“Tabito”)
1008	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)
1009	Scheduling Order in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774, Dkt. 35 (N.D. Ga.)
1010	Judicial Caseload Profile for the Northern District of Georgia
1011	Cover Pleading to Patent Owner’s Infringement Contentions in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774 (N.D. Ga.)
1012	Cover Pleading to Patent Owner’s Supplemental Infringement Contentions in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774 (N.D. Ga.) served June 21, 2023
1013	U.S. Pub. No. 2006/0187660 to Liu (“Liu”)
1014	U.S. Patent No. 7,324,174 to Tabito (“Tabito 174”)
1015	Declaration of P. Morgan Pattison, Ph.D.
1016	U.S. Patent No. 7,481,553 to Kim <i>et al.</i> (“Kim”)
1017	U.S. Pub. No. 2007/0064171 (“Sharp”)
1018	U.S. Pub. No. 2003/0223249 to Lee <i>et al.</i> (“Lee”)
1019	Transcript of the September 10, 2024 Deposition of Mr. Bohannon

I. Introduction

The '812 Patent is invalid. Rather than present substantive arguments in its Patent Owner's Response, Patent Owner ("PO") ignores the actual disclosure of the prior art and reads limitations into the claims of the '812 Patent in a failed attempt to distinguish from the prior art. Additionally, PO regurgitates arguments, nearly word-for-word, from the Preliminary Response, failing to address the Board's positions in its Decision Granting Institution of *Inter Partes* Review (the "ID"). Further, PO submits no credible expert testimony, instead relying on a declaration that largely parrots the Response.

As detailed in the Petition and further described here, each of the claim elements was well-known in the art, and a POSITA would have been motivated to combine the prior art to meet the claims. The challenged claims should all be cancelled as obvious.

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

The Response is nearly a word-for-word copy of the Preliminary Response. With respect to the construction of "reflector sheet configured to conform to a shape of a protruding feature on the tile" PO submits a copy of the Preliminary Response—*compare* Response at §III.C. *with* Paper 6 at §III.C.—notwithstanding the Board "encourag[ing the parties] to present their claim construction arguments and evidence as permitted by our rules." Paper 7, 15.

With respect to Ground I—*compare* Response at §V.A.i. *with* Paper 6 at §V.A.i.—PO disregards the Board’s ID rejecting PO’s incorrect argument that “Chou was intended for a completely different purpose than the ’812 Patent” (Paper 7, 30–32). PO simply copies the same section from its Preliminary Response.

PO again reproduces a nearly identical argument discussing claims 12 and 18 in its Response. *compare* Response at §V.B. *with* Paper 6 at §V.B. The same is true for the entirety of PO’s arguments against Grounds 2 and 3. *compare* Response at §VI *with* Paper 6 at §VI; *compare* Response at §VII *with* Paper 6 at §VII. Further, PO’s Expert, Mr. Bohannon, submits no new testimony with the Response. *compare* Ex. 2001 *with* Ex. 2006; Ex. 1019, 7:11-23.

III. Claim Construction

The term “conform” should be given its plain meaning, which is the same as the meaning provided by Petitioner in the underlying litigation as argued in the Petition. However, under either construction (Petitioner’s or PO’s), the claims are invalid.

IV. Ground 1 - Claims 1, 12, 15, and 18 are Obvious Over Chou in View of the Knowledge of a POSITA.

A. Chou discloses a “reflector sheet configured to conform to a shape of a protruding feature on the tile”

- 1. The '812 Patent does not exclude light emitters from being protruding features, and even if it did, Chou discloses additional protruding features.***

PO argues that Chou's LED 600, lead 650, and solder 800 are not protruding features because light emitters are not protruding features. PO's argument oversimplifies Chou, and incorrectly narrows the term “protruding features.”

First, PO argues that because “the '812 Patent distinguishes the surface protrusion or protruding feature from the solid state emitter” the elements disclosed in Chou are not protruding features. Response, 11–12. This ignores that Chou describes components that reflector sheet 700 covers other than the LED 600, including “the length of lead 650 ... and amount of solder 800.” Ex. 1005, 3:45–47, Fig. 3A.

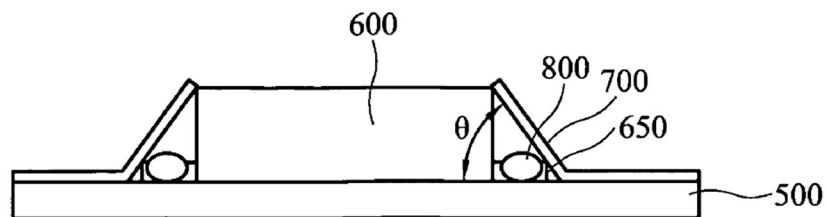


FIG. 3A

Second, PO incorrectly narrows the term “protruding features” by ignoring that the ’812 Patent states that large wire interconnect (LWI) 18 “is *but one example* of a surface protrusion.” ’812 Patent, 5:48-50. Thus, as the Board stated in its ID, “the ’812 patent does not expressly exclude emitters.” Paper 7 at 31. The ’812 Patent “suggests that both an LWI and an emitter are features of a solid state lighting tile that need to be accommodated by a reflector sheet.” *Id.* (citing ’812 Patent, 5:9-18). The Response never addresses this disclosure, or the Board’s related finding that the specification is not so limited. And PO’s expert refused to answer even basic questions regarding the meaning of protrusion. *See, e.g.*, Ex. 1019, 33:6-11 (“Q. Are you able to tell me what the plain and ordinary meaning of the term ‘protruding’ as used by the claims of ’812 patent is? A. I am not willing to do that because it’s outside the scope of my declaration.” (objection omitted)).

Additionally, PO ignores the claim language and presents an argument regarding the “intent” of the inventors to exclude LEDs from the claimed protrusions. Response, 12-13. First, the term “surface protrusion” is broader than the “but one example” of an LWI given in the specification. Second, PO submits no evidence of the inventors’ intent. Thus, this argument is nothing more than “unsupported attorney speculation, which is entitled to little probative weight.” Paper 7 at 32 (citing *Icon Health & Fitness, Inc. v. Strava Inc.*, 849 F.3d 1034, 1046 (Fed. Cir. 2017)).

PO's final attempt to narrow the claim language is belied by its own misapplication of the prosecution history. PO argues that "the '812 Patent distinguishes and excludes light emitters as protruding features" because the "prosecution history describes element 14a as an aperture, which is not equivalent to conforming to the protruding feature." Response, 13. But this portion of the prosecution history makes no mention of light emitters. Instead, it distinguishes the apertures in prior art references Chen, Ouderkirk, and Liu from the protruding features in the '812 Patent, stating that an aperture is a hole and therefore not an example of conforming to a protrusion. *See* Response, 13 ("an aperture might be provided to conform to a hole" (quoting Ex. 1002, 154)). This portion of the prosecution history never discusses light emitters at all, much less distinguishes them from a protruding feature. Indeed, as the Board correctly found, "the '812 patent does not expressly exclude emitters." Paper 7 at 31 (rejecting this argument).

2. *Chou's reflector sheet conforms to the protruding features.*

PO incorrectly argues that Chou's reflector sheet does not conform to the shape of a protruding feature. First, PO incorrectly states that "the only deformity described by Chou is shown in Fig. 31 [sic]." Response, 13. However, Chou's disclosure is not limited to Fig. 3. In fact, PO admits that Chou discloses a reflector sheet that can be made of a deformable material. *Id.* Thus, PO's limiting Chou to its

Fig. 3 is misplaced. Chou's entire disclosure, including its description of the use of a deformable reflector, discloses a conforming reflector. Ex. 1003, ¶ 41-44.

Second, PO wrongly states that "Chou does not disclose a reflector configured to conform to the shape of a protruding feature, rather Chou only discloses a reflector configured to conform to the height and width of the solid state light emitter." Response, 14. However, PO fails to consider what it means for a reflector sheet to be made of a deformable material, as disclosed in Chou. Ex. 1003, ¶ 41-44. For example, a deformable material can result in an angle that is different as it forms around different shapes of the protruding features. Ex. 1003, ¶ 41-44. Chou confirms as much (and expressly contemplates different shaped protruding features) by explaining with regard to Figure 3A that "[t]he angle θ will change with the height of the spotlight source (LED 600), the length of lead 650 of the spot light source (LED 600), and the amount of the solder 800." Ex. 1005, 3:42-51. A POSITA would understand this description to confirm that the reflector sheet conforms to the shape of all the elements it covers, e.g., the lead and the solder. Ex. 1003, ¶43. Moreover, a POSITA would understand that Chou's disclosure that the reflector could be made of deformable material means that the reflector would take the same shape or outline of the protruding feature, whether that is the solder and leads shown in figure 3A or other protruding features within the panel. Ex. 1003, ¶ 41-44.

Notably, PO argues that Chou does not conform to the protruding features under Petitioner’s proposed claim construction of “conform” – a reflector that overlays (e.g., by deformation). As explained above, this is incorrect. Moreover, PO never addresses whether this element is met under its *own construction*. As the Petition explains, under PO’s broader construction—which the Board preliminarily adopted—the claim is plainly met by Figure 3A of Chou.

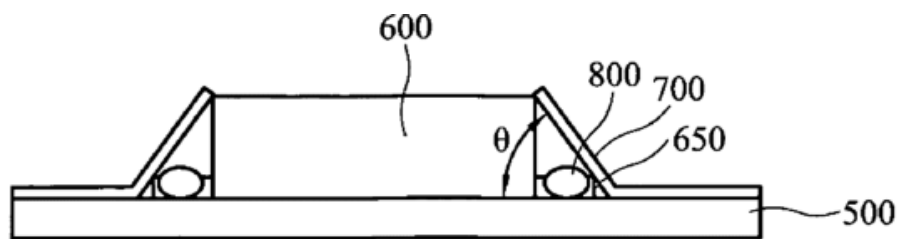


FIG. 3A

Tacitly acknowledging that the claim is invalid under the construction it urged, PO argues that “[t]he embodiments of the ’812 Patent are different and distinct from the deformity disclosed by Chou, such as the reflector conforming to a protruding feature by taking on the *exact same shape as the feature* or by providing a recess for the protrusion that has a similar contour.” Response, 16 (emphasis added). However, this statement is contrary to PO’s prior position on claim construction that conformance may be achieved “by *not* taking on the exact shape of the protruding feature,” such as “in figure 3, the ‘shape’ of the reflector sheet does not conform to the shape of protrusion 18.” Response, 5–6 (emphasis in original).

PO's attempt to limit the claim to two specific embodiments disclosed in the '812 patent's figures should be rejected. It is the language of the claims that controls, not the figures. *See Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1351 (Fed. Cir. 2013).

Under Petitioner's proposed construction, Chou's Fig. 3A and the specification's description of a deformable reflector discloses a reflector that "overlays (e.g., by deformation), and has the same shape, outline, or contour of a protruding feature." And under PO's construction, Chou's Fig. 3A discloses a reflector sheet that "provides cover and relief for a shape of a protruding feature on the tile."

3. *PO attempts to rewrite the claims to recite limitations requiring angles of light propagation.*

PO argues that, unlike Chou, the '812 Patent "describes a reflector that is normal to the emission surface of the LED." Response, 14–15. PO's position is flawed for three reasons. First, the claims do not require light reflections to be normal to the emission surface of the LED. Such an embodiment is not described in the '812 Patent, which never uses the words "normal" or "emission surface." The Board should reject this improper attempt to rewrite the claims.

Second, the '812 Patent discloses, as shown below in Figure 4, a reflector that propagates light at angles other than normal to the emission surface. So, not only is PO attempting to read limitation into the claims, but it is also attempting to disclaim embodiments.

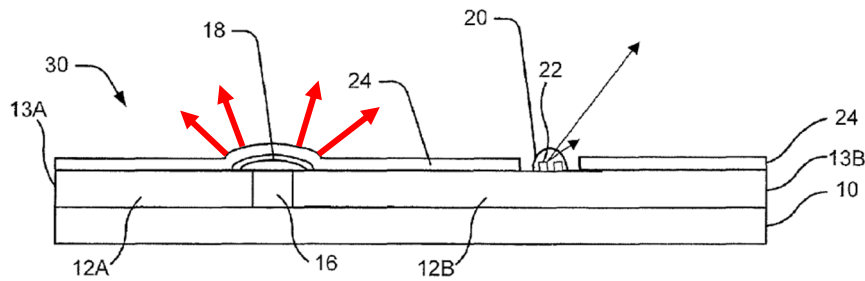


FIGURE 4

Ex. 1005, Fig. 4 (annotated). PO's own expert confirmed that the claims have no such requirement. Ex. 1019 at 52:15-18.

Third, Chou does in fact disclose a reflector that would reflect light normal to the emission surface. For example, Chou states that the reflector sheet 700 “forms an angle θ between about 0 degree to about 90 degree with the circuit board 500.” Ex. 1005, 3:42–45. A reflector sheet at an angle of 0 degrees, and even about 0, with the circuit board would reflect light normal to the emission surface. Ex. 1015, ¶50.

4. Chou was intended for a similar purpose as the '812 Patent.

PO incorrectly argues that Chou was intended for a different purpose than the '812 Patent. First, PO states that “[a] reflector sheet is meant to overlay the substrate in a way so as to improve the reflective qualities of the substrate,” but Chou’s “[s]lits cut into the reflector would reduce the surface integrity of the reflector.” Response, 16. However, the claims do not exclude a reflector sheet with slits, nor do they require some optimal reflective qualities that would exclude a reflector sheet with

slits. Additionally, the slits are an optional embodiment in Chou, which expressly contemplates a deformable reflector sheet without slits. Ex. 1005, 4:18–35.

Second, PO states that Chou does not share the intended purpose of the '812 Patent of a reflector covering protrusions without reducing the overall reflective quality of the reflector. But the claims never recite an intended purpose. And even if the claims did recite such an intended purpose—Chou states that it is directed to “a method of improving the covering area of the reflector sheet 300 so as to improve the lighting efficiency of the backlight module” (Ex. 1005, 1:58–60) and “[a]n object of the invention is to provide a light source assembly having high lighting efficiency” (*Id.* at 1:65–66). Accordingly, Chou is directed to improving the reflective quality of a reflector sheet just like PO asserts is the intended purpose of the '812 Patent.

Finally, PO fails to address the Board’s decision rejecting PO’s arguments regarding intended purpose. Instead, PO merely reproduces its prior response. *Supra* § II. PO presents no further evidence on this point and the Board should not reconsider this faulty argument.

B. Chou discloses “the reflector sheet comprises an aperture configured to be positioned proximate to the solid state lighting element, wherein the reflector sheet does not contact the solid state lighting element.”

1. Increasing the angle of Chou’s reflector sheet does not result in an unrestrained reflector.

PO argues that increasing the angle theta of Chou’s reflector sheet such that it does not touch the solid state lighting element would result in the reflector sheet “flapping around.” Response, 17–18. PO’s unsupported argument is simply wrong. The reflector sheet need not contact the LED, and the lack of connection does not mean that it would be unmoored and “flapping around.” Ex. 1003, ¶47-52; Ex. 1015, ¶11-14. Moreover, a reflector sheet made from a deformable material is not necessarily loose or unrestrained. For example, there is no specification of the force required to deform the material. This aside, the reflector sheet material could be deformable at the time of installation, and then later harden to be immovable (e.g., if produced from a resin). Indeed, as PO even admits, “a POSITA would know that the more rigid material is desirable since its reflective shape can be maintained.” Response, 27.

PO’s crude depiction of what Chou Fig. 3A would look like if angle theta was increased such that it does not touch the LED is hyperbole. A “slight increase” as described in the Petition is different from PO’s straw-man argument of increasing the angle to be a right angle. Rather, it would be readily apparent that a slight

increase would cause the angled reflector sheet to separate from the LED a small amount, while still conforming to the underlying protrusion and providing additional reflector sheet surface area over the protrusion to increase the amount of light reflected.¹ Ex. 1003, ¶47-52.

Moreover, Chou's specification confirms that the reflector sheet does not touch the LED. For example, Chou teaches that the angle will change depending on the "length of the lead 650" and the "amount of solder 800". Ex. 1005 at 3:45-48. As a POSITA would understand, an increase in the thickness of either the solder or lead would cause the reflector sheet to angle slightly more, which would lift the reflector away from the LED. Ex. 1003, ¶44. To be sure, Chou expressly contemplated thicker solder or thicker leads lifting the reflector away from the LED, because Chou described changes in the solder or lead affecting the angle θ . In FIG. 3, angle θ would not change if the thickness of either the solder or lead were reduced. Ex. 1015, ¶11-14. Additionally, Chou teaches, as a POSITA would understand, that the height of the LED can vary. Ex. 1005, 1:45-47. A low profile LED (with the

¹ During deposition PO's expert refused to even respond to questions regarding whether an LED was a three-dimensional component (Ex. 1019 at 37:17-23; 38:24-39:5; 40:22-41:3; 42:15-43:4) and whether reflector sheet would similarly have multiple dimensions. *Id.* 45:16-46:11.

same thickness solder and lead) would also cause the reflector sheet to not contact the LED. Ex. 1015, ¶11-14.

Next, PO argues that even if an LED component is in a clear protective casing or lens, the “reflector would still be unmoored and able to move about in transport potentially causing damage to the LED.” Response, 19. PO fails to consider that if the LED component is in a clear protective casing or lens, and the reflector is in contact with the casing or lens and would not be unmoored and would still not contact the solid state lighting element inside the casing or lens. Ex. 1003, ¶49.

PO further suggests that increasing the angle theta such that the reflector sheet is not touching the LED would increase the risk of a short circuit because the reflector sheet would be unmoored. However, PO’s argument is again based on the faulty assumption that a reflector with an increased angle of theta is necessarily “unmoored” and flap around. And again, PO’s only support for this proposition is a cite to its expert’s declaration, which merely regurgitates the same language as the Response. *See e.g., MarkForged Inc. v. Continuous Composites, Inc.*, IPR2022-01431, Paper 7, at 14 (P.T.A.B. Jan. 18, 2023). To the contrary, Dr. Pattison explains that a POSITA would understand that a reflector sheet that does not contact the LED would not be unmoored as it would be positionally restrained by the protrusion or restrained as a function of its material construction, or both. Ex. 1015, ¶14.

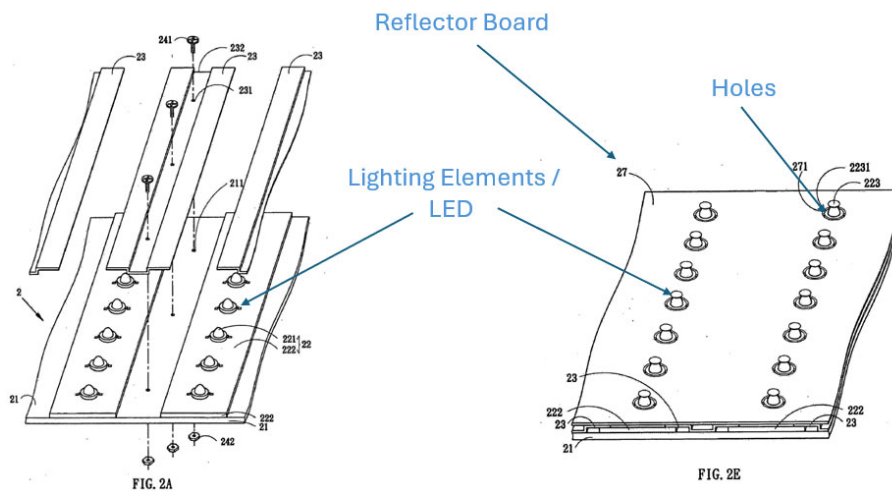
2. *Chou Fig. 1A shows that a reflector sheet that does not contact the solid state lighting element was known.*

PO argues that Chou Fig. 1A does not disclose the limitations of claims 12 and 18 because it does not explicitly show a reflector sheet that conforms to a protruding feature. However, PO's argument misses the point that Petitioner makes in referencing Chou Fig. 1A. As stated in the Petition, "Chou's description of such a design as 'prior art' as of the date Chou was filed, which is prior art to the '812 Patent, further confirms that such a design would have been known to a POSITA." Petition, 22. In other words, Fig. 1A is evidence that a POSITA would have found modifying a reflector sheet to avoid contact with the solid state lighting element obvious because it was known in the art. Ex. 1003, ¶50-52.

3. *A POSITA would be motivated to modify Chou's reflector sheet.*

PO argues that a POSITA would not have been motivated to modify Chou because "modification would lead the reflector sheet to freely move around." Response, 21. PO's argument is not persuasive for all of the reasons discussed above in Section IV.B.1. Moreover, Ex. 1013 (U.S. Pub. No. 2006/0187660 ("Liu")), which was cited on the face of the patent and discussed during the prosecution of the '812 Patent, is further evidence that a POSITA would have been motivated to modify Chou's reflector sheet so that it does not contact the solid state lighting element. Liu's Figs. 2A and 2E (annotated below) disclose a "reflective board 27 has holes

271 with dimension larger than that of the side-emitting lighting elements 223, such that the side-emitting lighting elements 223 could protrude from the holes 271.” Ex. 1013, [0022].



Thus, Liu is evidence that a POSITA knew a reflector sheet should not contact the solid state lighting element, and would have known the same could be true of Chou’s reflector sheet.²

² Petitioner cites Liu to rebut PO’s arguments and “show ‘the knowledge that a skilled artisan would bring to bear’ in reading” Chou. *Wildcat Licensing WI LLC v. Atlas Copco Tools & Assembly Sys. LLC*, No. 2022-1304, 2024 WL 89395, at *3 (Fed. Cir. Jan. 9, 2024) (“[W]e cannot say that [Petitioner] presented evidence or arguments in support of a shifting or new invalidity theory or went beyond responding to [PO’s] arguments.”); *Anacor Pharms., Inc. v. Iancu*, 889 F.3d 1372, 1381 (Fed. Cir. 2018).

PO also argues that friction would not be a problem because “Chou talks about a deformable material such as resin, which a POSITA would understand would not cause any concerning damage, if any at all.” Response, 21. This attorney argument is entitled to little probative weight. *See Icon Health*, 849 F.3d at 1046. Further, this defies logic, many deformable materials have electrical metal conductors or are themselves metal conductors (e.g., metallic foil), which a POSITA would not put in contact with electrical components, like LEDs. Ex. 1003, ¶50; Ex. 1007, [0016].

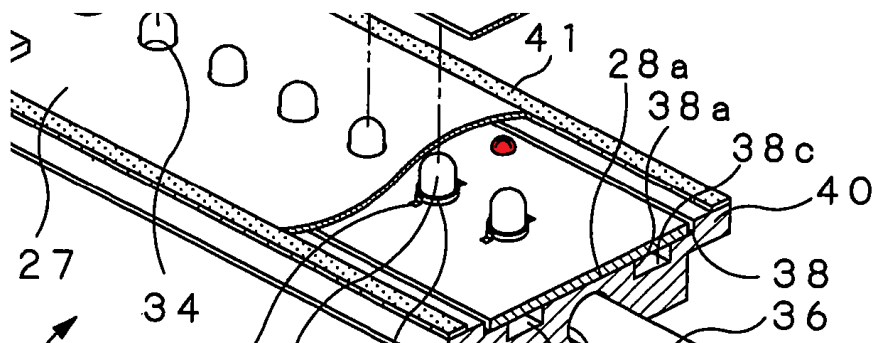
Finally, PO fails to substantively address why it would be obvious to modify Chou to add an insulator between the reflector sheet and the LED to reduce short circuits. Indeed, an insulating layer would increase the reflector sheet angle. Paper 1 at 22; Ex. 1003 ¶47, 49-51. Similarly, an encasement surrounding the LED would also increase the reflector sheet angle—as the dimensions of the LED system would increase—and the reflector sheet would contact the encasement, not the LED. PO’s expert acknowledged that such encasements were common in the art. Ex. 1019 at 17:12-19.

4. *Tabito demonstrates the knowledge a POSITA would bring to bear in reading Chou.*

PO argues that Ground 1 improperly relies on Tabito. However, Tabito is used to demonstrate the knowledge that a skilled artisan would bring to bear in reading Chou. *See Wildcat*, 2024 WL 89395, at *3. PO also suggests that “Tabito does not show a reflector that is ‘configured to conform to a shape of a protruding feature on

a tile’ nor does Tabito show a reflector sheet that is not in contact with the solid state lighting element.” Response, 22.

First, Tabito’s reflecting plate 26 does conform to a shape of a protruding feature on a tile under the Board’s preliminary construction and PO’s proposed construction. Tabito Fig. 4 shows a protruding feature (in red below) that is separate and positioned away from the LED 18. Under PO’s construction of “conform” the reflecting plate 26 conforms to this protruding feature as it provides cover and relief from the protrusion. *See* ID at 14 (“the Specification ... with respect to Figure 3 states that ‘the reflector sheet 14 may include recesses ... configured to provide relief for surface protrusions.... At this stage, we preliminarily agree with Patent Owner that these are alternative ways for a reflector sheet ‘to conform to a shape of a protruding feature.’”).



Ex. 1007, Fig. 4 (cropped and annotated). Also, Tabito figure 5 is not shown in publication because there may have been a clerical error but is described: “LED unit 18 is stored in the hermetically sealed light guide section 14” which is separate from the set screw 39 (shown in red below). *Id.*, [0100] and [0103]. Under PO’s

construction of “conform” the reflecting plate is conforming to this protruding feature. Figure 5 is shown in the issued version of Tabito, Ex. 1014 (U.S. 7,324,174), which clearly illustrates this feature:

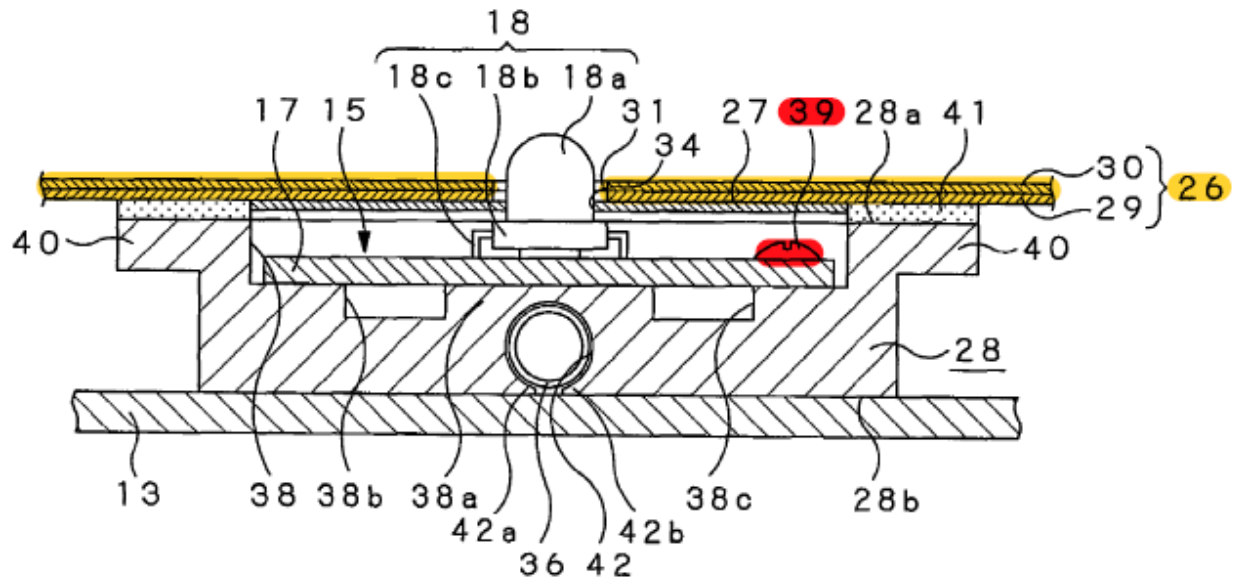


FIG. 5

Ex. 1014, Fig. 5 (annotated).³

Second, Tabito discloses a reflecting plate that is not in contact with the solid state lighting element. Ex. 1015, ¶51. As shown in Figure 2, the reflecting plate 26 does not contact the LED 18, shown by hatch lines not extending to LED 18.

³ The patented Tabito, Ex. 1014 (U.S. 7,324,174), includes the same disclosure and correct Fig. 5 and can be relied on to the same extent as Ex. 1007 here for Ground 3, discussed below.

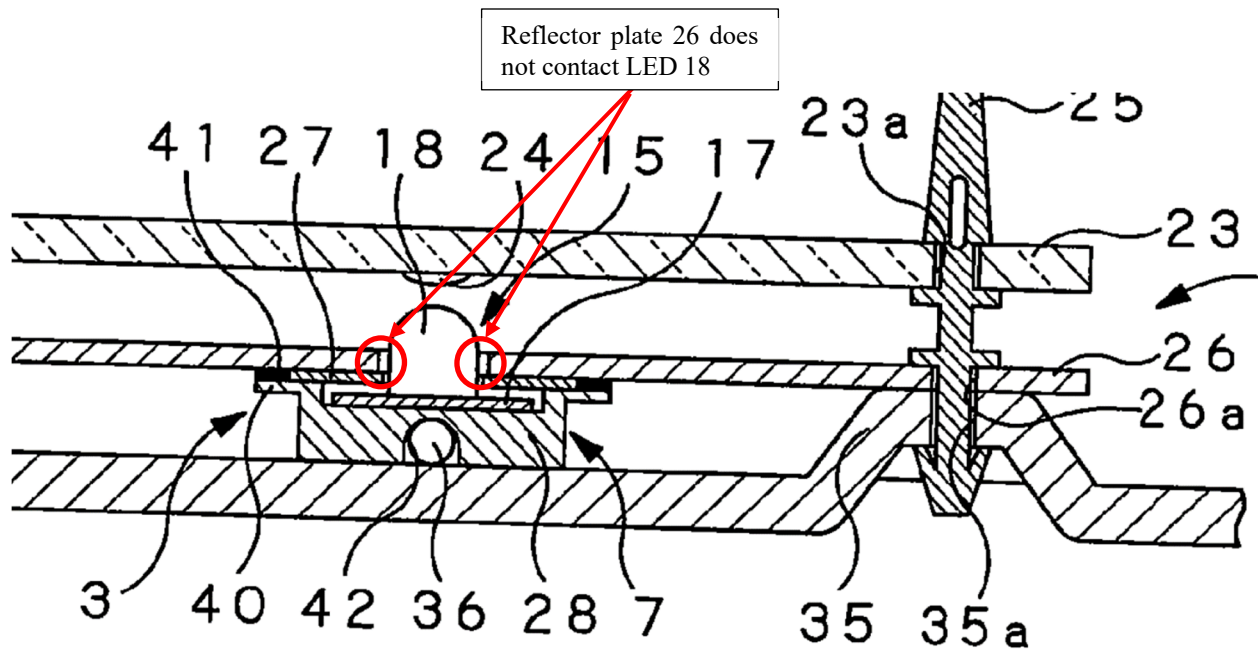


FIG. 2

Ex. 1007, Fig. 2 (cropped and annotated); *see also* [0027]. In fact, Tabito teaches that reflecting sheet piece 27 contains a smaller diameter 34 than the guide opening 31 of reflecting plate 26. *Id.* [0074]; Fig. 3; Ex. 1015, ¶15-17. Tabito teaches that in this arrangement, the reflecting plate 26 is separated from, and does not touch, the LED to provide electrical insulation. *Id.*

V. Ground 2 - Claims 2–6 and 21 are Obvious Over the Combination of Chou and Starry in View of the Knowledge of a POSITA.

A. A POSITA would have been motivated to apply Starry’s diffuse reflector to Chou.

PO incorrectly argues that “the arrangements in Starry are not compatible with the arrangement of Chou” because Starry does not “describe an arrangement wherein the light sources are arranged on the same substrate as the diffuse reflector.”

Response, 25. “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference,” but, “[r]ather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). A POSITA would have incorporated the teaching of a diffuse reflector from Starry into Chou, which does not specify the specific type of reflector. Ex. 1003, ¶¶64-70. Whether the arrangement in Starry includes the same substrate as Chou would not be necessary for a POSITA to look to combine these references. *Id.* Indeed, the Petition illustrates Starry’s diffuse reflector is a suitable option for Chou’s reflector by explaining that Starry’s reflector is used to maximize image quality and intensity. Petition at 25. Moreover, a POSITA would have recognized that using a diffuse reflector would provide additional benefits to further improve Chou. Ex. 1003, ¶¶64-70. For example, Chou recognizes the importance of the reflector sheet, stating that “[t]he brightness of the LED provided to LCD depends not only on the LED itself but also on the design and assembly of the reflector sheet adjacent to the LED.” Ex. 1005, 1:39–41.

PO also argues that “Starry’s invention primarily focuses on using CCFLs as light sources rather than back lit LEDs.” Response, 25. PO is wrong. Starry’s invention does include backlit LEDs. For example, “FIG. 3 is a cross sectional view of a backlit liquid crystal optical display with a light emitting diode light source

utilizing a diffuse reflector according to the present invention.” Ex. 1006, [0019]. Starry also states that “[t]he diffuse reflective article or optical display of the present invention contains a light source positioned within the optical cavity. ‘Light source’ refers herein to emitters of visible light and can be a single light source within an optical cavity or multiple light sources within an optical cavity. Example light sources include ... light emitting diode (LED).” *Id.*, [0030]. Moreover, “[i]n the optical display 1 shown in FIG. 3, the liquid crystal optical display device is shown with two light emitting diodes (LEDs) 14 as the light source providing light to an optical cavity 13.” Ex. 1006, [0039]. Starry even describes how LEDs may be used with diffuse reflectors. *See id.*, [0068], [0080]; Ex. 1003, ¶¶66, 68.

B. Chou in combination with Starry renders Claims 2 and 21 obvious.

PO’s lone argument as to why Chou in combination with Starry does not render claims 2 and 21 obvious is that “a POSITA would not be motivated to combine Starry with Chou.” Response, 26. As stated above, a POSITA would have been motivated to incorporate the specific diffuse reflector disclosed in Starry in place of the disclosed reflector in Chou. Ex. 1003, ¶¶64-70. The diffuse reflector in Starry further improves upon Chou and advances the goals set forth in Chou. *See supra* §V.A.

Moreover, contrary to PO’s Response, Starry’s diffuse reflector can be shaped. Ex. 1006, [0029]. Starry expressly teaches the diffuse reflector may be

placed “around the light source” (*Id.*, [0038]), where the light sources may be LEDs, (*Id.*, [0030]). Starry discloses a myriad of materials that the diffuse reflector can be made of, including polymers, such as polyolefins, which a POSITA would understand could be cut or formed to the arrangement disclosed by Chou. *Id.*, [0051]; Ex. 1003, ¶53. Indeed, Starry even discloses the same commercially available “MCPET” reflectors manufactured by Furukawa Electric Co., Ltd., (*Id.*, [0112]) and Gore DRP reflectors manufactured by W.L. Gore and Associates, Inc. (*Id.*, [0009]) as the ’812 Patent describes (Ex. 1001, 6:18–25).

C. Chou in combination with Starry renders Claim 3 obvious.

PO argues that Chou in combination with Starry cannot render claim 3 obvious because “the ’812 patent teaches that the ‘reflector sheet 14 may be microcellular polyethylene terephthalate (MCPET).” Response, 27 (quoting ’812 Patent, 5:7–9). However, the claim language recites “a polymer-based porous material.” Nevertheless, Starry provides examples of commercially available reflectors, which not only include “*polymer containing pores*” but also do in fact include MCPET. *See e.g.* Ex. 1006, [0051], [0055], [0117]; Ex. 1019 at 76:17-22.

D. Chou in combination with Starry renders Claims 4–6 obvious.

PO admits that Starry’s reflector sheet “range of 0.15 to 0.25 is within the range of 0 to 1.” Response, 28. But PO erroneously argues that this does not render claims 4–6 obvious because Starry’s disclosure “is exclusive of a significant portion

of the latter range” (*Id.* at 28) and the “preferred embodiment” of “the ’812 Patent is outside of the range disclosed by Starry” (*Id.* at 29). This is wrong as a matter of law. “A prior art reference that discloses an overlapping but different range than the claimed range can be anticipatory, even where the prior art range only partially or slightly overlaps with the claimed range.” *Genentech, Inc. v. Hospira, Inc.*, 946 F.3d 1333, 1338 (Fed. Cir. 2020) (citation omitted).

Despite PO’s argument being contrary to fundamental principles of patent law, Starry does disclose reflector sheets throughout the entirety of the ’812 Patent’s claimed range. Ex. 1003, ¶¶53-55, 64-70. For example, Starry states that “[n]onwoven sheet diffuse reflectors comprising a single nonwoven sheet have a nonwoven sheet thickness of from about 20 μm *to about 1,000 μm*,” squarely satisfying the claim limitation of “a thickness of less than approximately” 1.0/0.5/0.25 millimeter(s) of claims 4-6. Ex. 1006, [0075] (emphasis added); Ex. 1019 at 84:10-12. Moreover, Starry even claims “the average thickness of said diffuse reflector is less than about 900 μm .” *Id.* at Claims 23, 56.

VI. Ground 3 – Claims 7, 10–11, 14, 16–17, 19–20, and 23 are Obvious Over the Combination of Chou and Tabito in View of a POSITA.

PO argues that Tabito’s mounting of stud members to the back panel is not the same as mounting posts in the substrate. Response, 30. PO fails to consider that an interconnection substrate is not necessarily the same as a substrate generally, and that Tabito’s LED 18 is mounted on a substrate comprised of a back panel 13,

although through intermediary components. *See, e.g.*, Ex. 1007, Fig. 2, [0101]. Moreover, a substrate is simply a base material upon which other materials are deposited or devices are built, which may include a back panel as disclosed in Tabito. Ex. 1001, 3:27-40; 6:9-17. Thus, Tabito discloses “forming a plurality of mounting posts in the substrate” in claim 20.

PO also argues that “Tabito does not disclose any of the elements of independent claim 1 which are absent from Chou.” Response, 32. However, Chou discloses every element of claim 1, as discussed in the Petition and above in Section IV.

VII. PO’s Purported Expert is Entitled to No Weight.

PO submits a declaration from its expert, Mr. Bohannon. *See* Ex. 2006, (the “Bohannon Declaration”). The Bohannon Declaration should be entitled no weight because it simply parrots the Response. 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) (precedential) (listing cases). Rather than providing any insightful expert opinions and analysis, Mr. Bohannon simply repeats nearly the same text stated in the Response. *E.g., compare* Bohannon Declaration, ¶45–52, 56, etc., *with* Response, 6–8, 14, etc. Therefore, the Bohannon Declaration should not be entitled any weight.

Moreover, Bohannon repeatedly refused to answer questions about his declaration during deposition. *See, e.g.*, Ex. 1019 at 19:24-20:9; 23:5-13; 33:6-11; 33:13-22; 34:7-14; 37:17-23. Indeed, as Mr. Bohannon testified in response to the simple question, his lack of response was not lack of understanding or any appropriate reason, but an unashamed lack of “willingness to answer.”

Q. Are you able to answer it? Does an LED emitter chip have three dimensions?

A. So it's not the able to answer that's a problem. · ***It's the willingness to answer.*** So you're -- nowhere in my declaration do I discuss the physical properties of LEDs. I don't talk about mass and dimensionality of various parts in here.

Ex. 1019 at 38:24-39:5.

Scope is not a proper reason to refuse to answer. *Apple Inc. v. Voip-Pal.com, Inc.*, Nos. IPR2016-01198, -01201, Paper 28 at *3 (P.T.A.B. April 19, 2017) (“Patent Owner’s reason for the instruction not to answer—that the question is outside the scope of the deposition—is not one of the reasons set forth in the Trial Practice Guide for instructing a witness not to answer.”).⁴ Mr. Bohannon’s repeated failure to engage in deposition—at the apparent instruction of counsel—

⁴ Mr. Bohannon expressly discusses dimensionality of LED’s in his declaration. *See* Ex. 2006 at ¶54 (“Chou instead discloses a reflector sheet 700 which changes with the “height of the spotlight source (LED 600)....””).

demonstrates that his declaration should be given no weight, to the extent the Board even accepts his declaration at all.⁵

VIII. Conclusion

For all of the reasons stated above, the Challenged Claims are invalid.

Respectfully submitted,

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⁵ Counsel apparently instructed Mr. Bohannon to respond in this way as was evident through repeated improper speaking objections. *See, e.g.*, Ex. 1019 at 24:11-13 (“MR. MASSAND: If you ask questions within the scope of his declaration, he will answer.”); 50:21-24 (“MR. MASSAND: You're not talking about his declaration. You're going way outside the scope. You can easily ask questions about the declaration.”).

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 5591 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 17, 2024

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CERTIFICATE OF SERVICE

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