

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Hisense USA Corporation  
Petitioner

v.

Brightplus Ventures LLC  
Patent Owner

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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

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*Inter Partes* Review No. IPR2023-01385

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**PETITIONER'S CLAIM CONSTRUCTION SUBMISSION**

**Table of Contents**

I. Introduction..... 1

II. Conform Does Not Require Taking the Exact Shape.....2

III. Effects of the Aforementioned Construction on the Prior Art  
Grounds.....2

    A. Under Any Construction Kim Renders the Claims  
    Obvious. ....2

    B. Under Any Construction Chou Renders the Claims  
    Obvious. ....3

    C. Under Any Construction Lee Renders the Claims  
    Obvious. ....7

    D. Under PO’s Construction Tabito Renders the Claims  
    Obvious. ....8

    E. Under PO’s Construction Liu Renders the Claims  
    Obvious. ....9

IV. Conclusion .....10

**LIST OF EXHIBITS**

| <b>EXHIBIT</b> | <b>DESCRIPTION</b>                                                                                                                                                                |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 to Sharp (“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 Board requested additional briefing with respect to the word “conform” and that the parties address “whether the reflector sheet shown in Figure 3 of the ’812 patent is considered to be configured to conform to a shape of the protruding feature (LWI 18).” Paper 17 at 1, 4; Paper 18 at 8. As to the latter, the answer is yes.

Originally, Petitioner addressed the competing constructions from the litigation, however, as discussed in the Board’s Preliminary Guidance (“PG”), one of those two constructions may be understood to exclude the embodiment shown in Figure 3 of the ’812 Patent – an embodiment which Patent Owner (PO) specifically added substitute claim 26 to capture. *See* Paper 12 at 9-10. Moreover, in the PG the Board appears to propose another construction of conform as “adjusted or manipulated in any way to fit, accommodate, or be married in some shape to.” Paper 18 at 17. Petitioner respectfully submits that this additional construction is unnecessarily narrow and, unlike PO’s construction, unsupported by the intrinsic record. Thus, upon further development of the record, Petitioner adopts PO’s construction, a “reflector sheet that provides cover and relief for a shape of a protruding feature on the [solid state lighting] tile.” This construction encompasses Petitioner’s proposed construction but does not exclude embodiments described in the specification (i.e., FIG. 3 or 4). As such, PO’s construction is not disputed.

Petitioner also “address[es] the effect of the aforementioned construction on the unpatentability issues” below. Paper 17 at 4. Indeed, as explained below, the prior art discloses the claims under either the PO’s, Board’s, and Petitioner’s original construction, or any reasonable interpretation of the word “conform.”

## **II. Conform Does Not Require Taking the Exact Shape.**

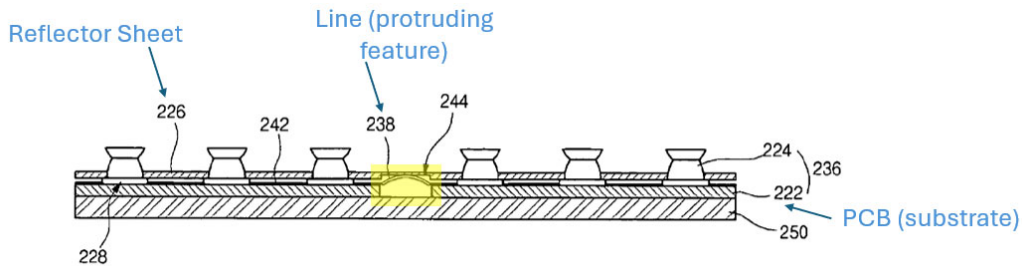
The Board asked the parties to “address explicitly whether ‘conform’ includes not taking on the exact shape of the protruding feature.” Paper 17 at 4. Here, the answer is no. The claim does not require “the *exact* shape of the protruding feature” because neither the specification nor the claims compel such a narrow reading. Rather, the specification provides examples in which the reflector has a similar shape, outline, or contour of the protruding feature (e.g., FIG. 4) and examples where the reflector provides cover and relief to the protruding feature (e.g., FIG. 3). Moreover, in the context of the patent and prior art, a POSITA understands how and why reflector sheets can accommodate (e.g., by deformation) protrusions. This does not necessarily result in the reflector sheet having the *exact* shape of a protrusion.

## **III. Effects of the Aforementioned Construction on the Prior Art Grounds**

### **A. Under Any Construction Kim Renders the Claims Obvious.**

As already recognized by the Board, the Kim-Sharp ground satisfies the PO’s construction, the Board’s implicit construction, and Petitioner’s original construction. Paper 18 at 1-15. Kim shows in FIG. 3 that “a portion of the reflective

sheet 226 ...[having] a concave portion 244 to prevent the reflective sheet 226 from contacting the line 238. That is, *the reflective sheet 226 includes the concave portion 244 so that a projected portion of the line 238 is not pressed by the reflective sheet 226.*” Kim, 5:36-41 (emphasis added); Paper 16 at 5-6.



Kim, FIG. 3 (annotated). The reflective sheet 226 also provides *cover and relief* for the shape of the line 238, as shown in FIG. 3. Paper 16 at 6; Ex. 1015, ¶27.

The reflective sheet 226 in Kim *also conforms to the same shape, outline, or contour* of a protruding feature (line 238) via the concave portion 244. Paper 16 at 5-6; Ex. 1015, ¶25-28. Kim’s reflector has a concave portion 244 that rounds inward and fits around curved line 238. Ex. 1016, 5:36–41; Paper 16, 6; Ex. 1015, ¶28. Thus, concave portion 244 of the reflective sheet 226 conforms to the protrusion, line 238, by having the same shape, outline or contour.

## B. Under Any Construction Chou Renders the Claims Obvious.

Chou also satisfies PO’s construction, the Board’s implicit construction, and Petitioner’s original construction. Chou shows in FIG. 3A that the reflecting plate 700 provides cover and relief for the protrusion (e.g., solder 800), for example, by

having a variable angle  $\theta$  conforming to the protrusion that the reflector sheet overlays, which satisfies the claim under PO's construction. Petition at 19.

Chou also describes a deformable reflector. Chou at 4:30-32; *see also id.* at 4:18-36; Ex. 1003, ¶42. Such a reflector sheet would overlay and have the same shape, outline, or contour of any protrusion such as the LED 600, lead 650, and solder 800, which satisfies the claim under the Board's implicit construction and Petitioner's original construction. Ex. 1003, ¶43. Thus, Chou discloses "conform" under either construction. This is true with respect to the substitute claims and the original claims, including claims 12/18 and substitute claims 25/27.

Moreover, the Board's reliance on Chou's "silence" reads too much into Chou's goal of maximizing coverage. Chou's teaching of conformance, in the context of this invention, is consistent with and discloses all of the claim limitations. The Board's concerns that "[Dr. Pattison's] testimony appears to contradict Chou's stated goal of 'improving the covering area of the reflector sheet 300 ... so as to improve the lighting efficiency of the backlight module'" and that "the testimony appears to contradict Chou's explicit teaching that the reflector sheet should be positioned snug against the LED" are unwarranted. Paper 18 at 24-25.

Chou seeks to "improv[e] the covering area of the reflector sheet 300" compared to the prior art as shown in FIGs. 1A/1B, which had a larger hole primarily to avoid the welding positions. Chou, 1:44-60. Chou's disclosure does not require

the reflector sheet to touch the LED, especially if the reflector sheet is held at an angle  $\theta$  by the “solder or lead” or the “casing or lens.” Indeed, as the Board and PO recognized, Chou is silent on this point. And contrary to the Board’s suggestion, Chou’s stated goal is not an *absolute requirement* that the reflector sheet contact the LED. Indeed, while Chou teaches maximizing the covering area of the reflector sheet 300, it never suggests that this is regardless of any detrimental effects this may cause or to the exclusion of other trade-offs. For example, the aperture of the hole 750 could remain slightly smaller than the size of the underlying LED, low-profile LED, or LED with the casing or lens. Paper 15 at 12-13; Ex. 1003, ¶44; Ex. 1015, ¶14. All of this would be understood by a POSITA in the context of its disclosures related to conforming reflector sheets.

The portion of Chou cited by the Board as “teaching that the reflector sheet should be positioned snug against the LED” *does not teach* that the reflector touches the LED. Paper 18 at 24-25. And in any event, it is but a single passage discussing one implementation of Chou. Moreover, the cited passage is provided in the context of FIGs. 2 and 3 and accounts for the geometry of placing the reflector sheet over the LEDs. Providing slits to form a hole slightly smaller than the size of the LED allows for the slits to rise upwards when contacting the solder 800/lead 650 and provides for a narrower proximity to the LED than if hole was the same size as the LED. This passage simply does not require contact with the LED.

Chou's deformable reflector also does not teach away from not contacting. The undisputed evidence shows that there are many reasons for having a conforming reflector sheet that does not contact the LED. For example, Dr. Pattison explains with respect to original claims 12 and 18 that a POSITA would have been motivated to modify the reflector sheet such that the reflector sheet does not contact the solid state lighting element 600, for example, to avoid mechanical friction, to ensure the reflector sheet does not block any light, and to reduce risk of a short circuit. *See* Ex. 1003, ¶47-50. This is also confirmed by the prior art cited for the substitute claims, which the Board recognized as describing "[advantages provided by] a reflector sheet that ***does not contact*** the lighting elements that are exposed through the reflector sheet." *See* Paper 18 at 15 (emphasis in original).<sup>1</sup> Chou's goal of maximizing reflective area may be accomplished so long as the coverage is improved compared to the prior art.

Finally, the Board appears to believe that Petitioner was relying on Chou's FIG. 1A as disclosing original claim 12 and substitute claim 25. *See* Paper 18 at 25. That is not the case. After Dr. Pattison explained the benefits of a reflector sheet that does not contact the LED, he noted that Chou FIG. 1A (which is listed as "prior art") is an example of a reflector sheet that does not contact the LED. Ex. 1003, ¶50.

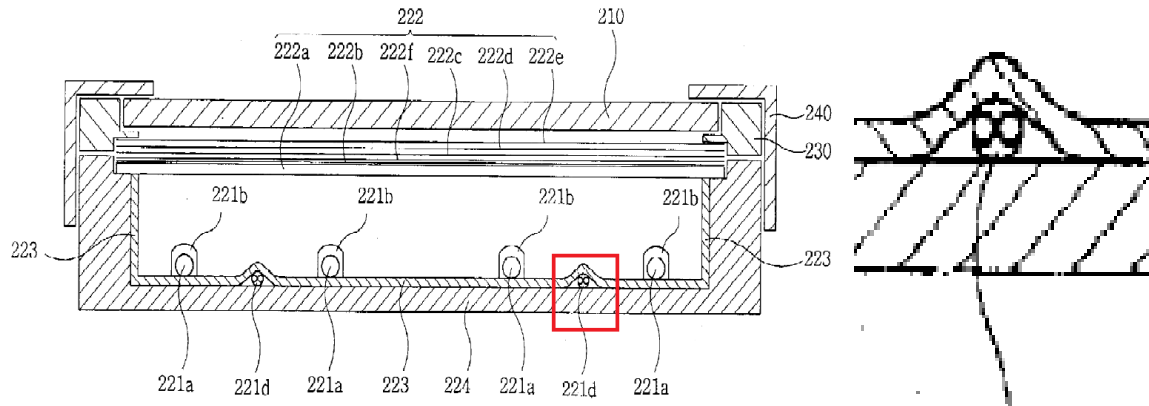
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<sup>1</sup> To be clear, Petitioner is not relying on these additional prior art references for its original grounds. However, these references reflect and corroborate Dr. Pattison's original testimony that a POSITA would understand the advantages of a conforming reflector sheet.

Thus, a POSITA reading Chou would understand that it discloses a conforming reflector sheet – one that can accommodate protrusions, both near and away from the LED, and that such reflector sheet could be designed to not contact the LED. Chou’s teaching of a “snug” reflector is not a maxim that a POSITA would blindly follow. Rather, Dr. Pattison explains how and why a POSITA could both maximize the reflective area and simultaneously, when balancing the pros and cons of such a goal, design a reflector sheet that does not touch the LED. As the Supreme Court has recognized, the obviousness analysis is not so rigid: “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a [POSITA] would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). A POSITA would understand such a design would result in negligible, if any, loss in the covering area of the reflector sheet. Including a small gap does not transform the embodiment to what Chou admonished relative to its FIG. 1A.

**C. Under Any Construction Lee Renders the Claims Obvious.**

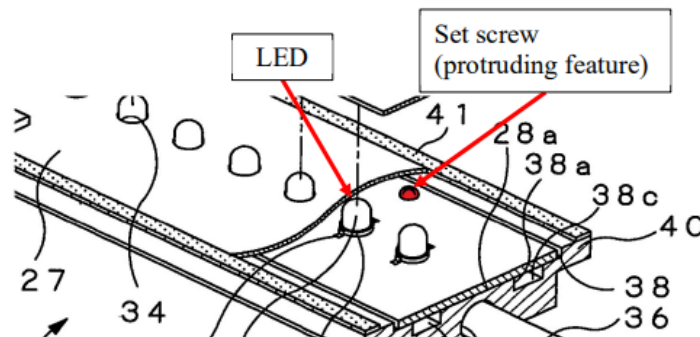
Lee shows in FIG. 2 that “extended second power line 221d may be disposed under the reflecting plate 223 so as to prevent the second power line 221d from affecting an image.” Lee, [0049]; Paper 16 at 22; Ex. 1015, ¶43.



Lee, FIG. 2 (full and cropped). The reflecting plate 223 goes over and covers the second power line 221d, providing *cover and relief*. Paper 16 at 22; Ex. 1015, ¶43. The reflecting plate 223 also overlays the second power line 221d and has the same shape, outline, or contour of the second power line 221d. *Id.*

#### D. Under PO's Construction Tabito Renders the Claims Obvious.

Tabito shows in FIG. 4 that reflecting plate 26 provides cover and relief from the protrusion (e.g., set screw 39):



Tabito, FIG. 4 (full and cropped/annotated); Ex. 1015, ¶18. Tabito discloses that the “reflecting plate supports 40, 40 are designed for holding the reflective sheet piece 27, associated with the light emitting unit, in a height-wise position of protruding

the light emitting part 18a of each LED unit 18 from the guide through-hole 34 facing the LED unit.” Tabito, [0106]; *see also id.*, [0108]. This configuration of the reflecting plate 26, reflecting plate supports 40 and the reflective sheet piece 27 provides **cover and relief** from the protrusion (set screw 39). This is further shown in the patented version, Tabito 174:

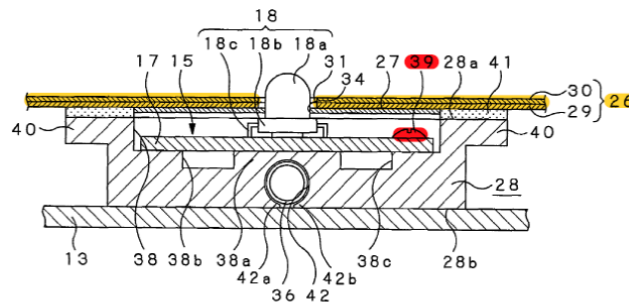


FIG. 5

Ex. 1014 (Tabito 174), FIG. 5 (annotated); Ex. 1015, ¶18-19, 21. Tabito’s reflector sheet 26 provides cover and relief *without any aspect that extends down into the volume containing Tabito’s set screw 39 in a way that would not conform to the shape of the set screw 39*. Ex. 1015, ¶19.

#### E. Under PO’s Construction Liu Renders the Claims Obvious.

Liu shows in FIGs. 2A and 2E that the reflective board 27 provides **cover and relief** from the protrusion (bolts 241). As can be seen in FIG. 2E, the reflective board 27 provides **cover and relief** for the protruding features (e.g., rigid metal board 23 and bolts 241).

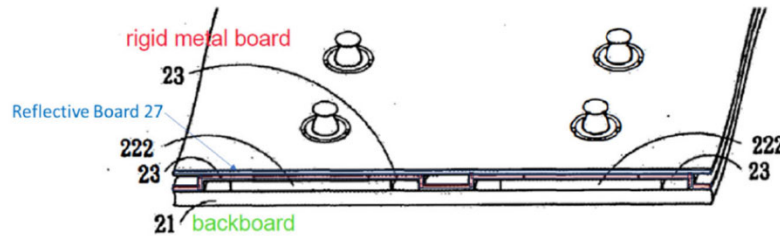


FIG. 2E (cropped and annotated); Paper 16 at 17-18; Ex. 1015, ¶38-39. The reflector board 27 provides cover and relief without any aspect that extends down into the volume containing the rigid metal board 23 or bolts 241.

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Importantly, the grounds advanced in the proceeding include combinations based on the primary references, such as Chou, Kim, and Lee, which render the claims obvious under any construction. Further, Petitioner has also advanced grounds of Chou in view of Tabito and Chou in view of Liu, each of which also meet both constructions by virtue of their respective combination with Chou.

As such, the prior art grounds satisfy the claim elements under any reasonable understanding of “conform,” including both litigation constructions and the construction that the parties agree on for purposes of this proceeding.

#### **IV. Conclusion**

For all of the reasons stated in Petitioner’s papers and above, the prior art discloses this limitation under any reasonable interpretation of the word “conform.”

Respectfully submitted,

By: /s/ *Matias Ferrario*  
Matias Ferrario  
Registration No. 51,082

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on the date below a copy of this  
**PETITIONER'S CLAIM CONSTRUCTION SUBMISSION** has been served via  
email on the following:

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Dated: October 14, 2024

By: /s/ *Matias Ferrario*  
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