

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hisense USA Corporation

Petitioner,

v.

Brightplus Ventures LLC,

Patent Owner

Case No. IPR2023-01168

U.S. Patent No. 9,605,835

**PATENT OWNER'S REPLY IN SUPPORT OF ITS REVISED
MOTION TO AMEND UNDER 37 C.F.R. § 42.121**

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	THE SUBSTITUTE CLAIMS HAVE WRITTEN DESCRIPTION SUPPORT.....	1
III.	CLAIM 21(a)	2
IV.	CLAIM 21(b) and 21(c).....	3
V.	CLAIM 21(g)	4
VI.	CLAIM 21(h).....	5
VII.	CLAIM 22	8
VIII.	CLAIM 23.....	9
IX.	CONCLUSION.....	11

Cases

<i>Lectrosonics v. Zaxcom</i> , IPR2018-01129 (PTAB, Feb. 25, 2019).....	2
---	---

Regulations

37 C.F.R. § 42.121.....	3
-------------------------	---

I. INTRODUCTION

In the event the Board finds any of the challenged claims unpatentable, Patent Owner requests that the Board grant its revised motion to amend and issue the proposed substitute claims. Petitioner's arguments are unavailing as set forth below.

II. THE SUBSTITUTE CLAIMS HAVE WRITTEN DESCRIPTION SUPPORT

Substitute claim 21 finds support in the specification at 8:30-33. The spec states that "a tile 10 may include a metal core PCB (MCPCB) including a metal core having thereon a polymer coating on which patterned metal traces... may be formed." The inventors of the '812 patent warned that "the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention... It will be further understood that the terms 'comprise'... 'includes' when used herein specify the presence of stated features... elements, and/or components, but do not preclude the presence or addition of one or more features... [or] components." (7:20-31). Contrary to Petitioner argument, the '812 does not offer one limited embodiment where all the layers/components are only contained in the lighting tile substrate. Fig. 1 further demonstrates a lighting tile that includes multiple components and elements, and all such elements, and the substrate to which the elements are mounted, can be mounted on the lighting tile.

Petitioner does not offer evidence to support the argument that the "reflector that extends to cover the lighting tile and includes a plurality of sidewalls outside of

the packaged solid state lighting devices" limitation lacks written support. Petitioner simply argues that Holman is identical to Fig. 7 of the '812 (Paper 28 at 2). Figs. 5A and 7 of the '812 Patent both illustrate a reflector, and reflector sidewalls, outside of the packaged solid state lighting devices.

Substitute claim 24 finds support in Figs. 5A and 7 which both demonstrate a reflector that is offset from the packaged solid state lighting devices. Petitioner has not presented compelling evidence that would suggest otherwise.

III. CLAIM 21(a)

“at least one substrate comprising a metal core printed circuit board having traces formed thereon mounted on a lighting tile and having a first side parallel to a principal plane of the lighting panel”

Mok does not disclose at least one substrate comprising a metal core printed circuit board having traces formed thereon mounted on a lighting tile and having a first side parallel to a principal plane of the lighting panel. Mok discloses a single base panel 12 "comprise[s] a printed circuit board". Mok fails to disclose that the base panel 12 comprising a PCB is mounted to a separate lighting tile or that the PCB has a first side parallel to a principal plane of the lighting panel. Epstein also does not disclose a separate lighting tile to which substrate 308/408 is mounted to. The additional references submitted by Petitioner all disclose wiring or PCB elements, but not that the PCB is mounted to a separate lighting tile. Petitioner has also not identified a principal plane of a lighting panel in any of the references or how the first side of a substrate would be parallel to said principal plane. PO submits

that the prior art references, by being silent on a lighting tile separate from the substrate and a substrate having a first side parallel to a principal plane of the lighting panel, do not render claim 21a obvious.

IV. CLAIM 21(b) and 21(c)

“a plurality of strings of packaged solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light; wherein the plurality of strings of packaged solid state lighting devices is mounted on the lighting tile”

Similar to the arguments made above with respect to claims 21[a], the prior art references do not disclose a separate lighting tile which the plurality of strings of packaged solid state lighting devices are mounted on. Further, the claim requires light devices on a first side of the substrate, which is mounted on the lighting tile.

Epstein discloses that separate tiles 304 comprise lighting elements 306. Epstein demonstrates in Figs. 3B and 3C that the tiles 304 and lighting elements 306 comprise the same layers 308, 310, and 312. Therefore, Epstein discloses that the lighting elements 306 are the tile. Petitioner recognizes this, “Epstein’s light emitting elements 306, which ‘may be packaged LEDs’ are mounted on the substrate 408, which is part of the lighting tile 304” (Paper 28 at 6 - emphasis added). Epstein’s disclosure that the light elements 306 are the tile, does not render claim 21[b] and [c] obvious, since the claimed limitation requires a plurality of packaged solid state lighting devices mounted to a separate lighting tile. Therefore, the prior art references do not render the claim obvious.

V. CLAIM 21(g)

“a reflector mounted to the lighting tile and on the first side of the at least one substrate, the reflector being outside of the packaged solid state lighting devices”

Mok demonstrates a reflective surface 50 affixed to base panel 12. Epstein discloses an intermediate layer 422/522/622 mounted on substrate 408. Li discloses a reflector on a PCB. All three references suffer from the same deficiency, namely that the purported reflective element is not mounted to both a lighting tile and a first side of at least one separate substrate. Petitioner has not offered compelling evidence as to why a POSITA would find that the references disclose the claimed limitation.

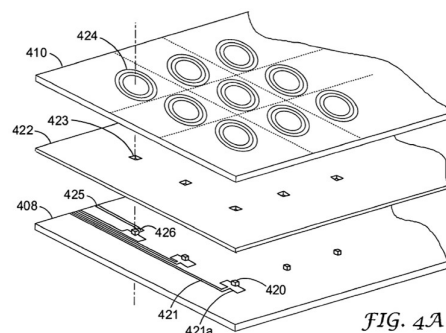
Petitioner equates the LED chips 301 of Park and the LED chips 56 of Ayabe to the packaged solid state lighting devices of claim 21[g]. Park discloses that the LED package 300 is made up of LEDs chips 301, wiring part 320, and the reflective cup part 311. (EX. 1031 at 7-8). Ayabe discloses LED chips 56 encapsulated in molded unit 54 (EX. 1017 at ¶0091). Thus, both Park and Ayabe describe a reflective component that is part of the LED package while the claims require the reflector to be outside of the packaged solid state lighting device. Therefore, neither Park nor Ayabe teach this limitation. To the extent that Petitioner disagrees, neither reference teaches that the respective reflective element is disposed on both a lighting tile and the first side of a separate substrate.

PO submits that the prior art references do not teach the claim limitation.

VI. CLAIM 21(h)

“wherein the reflector extends to cover the lighting tile and includes a plurality of sidewalls outside of the packaged solid state lighting devices that are angled with respect to the principal plane of the lighting panel”

As stated above with respect to claims 21[a] and [g], none of the prior art references disclose the claimed lighting tile requirement. Petitioner also present a new argument that contradicts with previous statements made regarding Epstein. Petitioner claimed that substrate 408 satisfies the MCPCB substrate element disclosed in claim 21[a] (Paper 28 at 3), and now Petitioner argues that “intermediate layer 422/522/622, a reflector, extends to cover the lighting tile of the PCB. *See, e.g.*, Ex. 1008, [0048], Fig. 4A.” (Paper 28 at 13). Fig. 4A (shown below) depicts a substrate 408 that is the PCB, therefore Petitioner argues that substrate 408 satisfies both the “substrate” of claim 21[a] and the “lighting tile” of claim 21[h]. Petitioner’s argument fails to demonstrate that Epstein discloses both a substrate and a lighting tile as separate and distinct elements.



Epstein also does not demonstrate a reflector covers a lighting tile and includes a plurality of sidewalls that are angled to a principal plane of the lighting panel. Petitioner relies on the declaration of its expert to support the argument that the sidewalls of the apertures in intermediate layer 422/522/622 “would need to be angled with respect to the substrate 408 to leave space for the LEDs that arranged on the substrate” (Ex. 1036 at ¶51 and Paper 28 at 13). However, as shown above in Fig. 4A, and in other embodiments such as Fig. 6 and 7, Epstein demonstrates that the respective apertures are completely parallel to LEDs 420/620. Petitioner does not offer compelling evidence as to why a POSITA would need or want to depart from Epstein’s disclosure.

As noted in PO’s RMTA, “Holman disclosures in Figs. 3, 7, 13, and 14 all refer to an LED chip 70 which is located inside of package element 161... the sidewall reflector of Fig. 14 is a ‘packaging element’; it is not outside the package as required by presently proposed claim 21.” (Paper 25 at 7). Therefore, Holman

does not disclose a reflector that covers a lighting tile and includes a plurality of sidewalls outside of the solid state lighting devices. Park suffers from the same deficiency. As discussed above with respect to claim 21[g], Park does not disclose a reflective component that is outside of the packaged solid state lighting devices.

Li does not disclose a reflector that covers a lighting tile (see above - claim 21[g]). Li also demonstrates a reflector 2 that extends vertically or horizontally, with no portion of it being angled. Therefore, Li does not disclose a reflector that that is *angled* with respect to a principal plane of the lighting panel.

The Board recognized that Lamb (Prelim. Guidance at 26-27), Ayabe (Prelim. Guidance at 33), and Saccomano (Prelim. Guidance at 40) did not disclose a reflector that is extended and angled with respect to a surface of a substrate. PO submits that the Board's analysis applies to claim 21[h]. Claim 21[h] requires that the reflector extends to cover the lighting tile (e.g., a lighting tile surface); this is identical to a reflector that is extended with respect to a surface of the substrate. Additionally, the claim requires the reflector to be angled with respect to a principal plane of the lighting panel. It can be understood that the plane of the lighting panel is defined by a surface of the lighting panel, the various layers being stacked along a vector normal to this surface such that the layers in their long axes are parallel to the surface. PO further demonstrates the deficiencies with respect to Lamb (Paper 25 at 8-9), Ayabe (Paper 25 at 13-14) and Saccomano (Paper 25 at 18-19).

VII. CLAIM 22

“wherein the lens surrounds each of the packaged solid state lighting devices”

As the Board pointed out, Mok discloses a “reflector cup 32 and its reflective coating 58 (together with other elements, such as lens 36 and diode junction 34) form a light emitting element 14” (Prelim. Guidance 19). Mok's Fig. 3 discloses a lens 36 that is formed with and *on* an LED package 14. First, the lens is a part of the LED package and is not a separate lens component. This is supported by the LED 14 fabrication process described by the Board “(iv) formed ‘lens 36... over the diode junction 34 and reflector cup 32.’” (Prelim. Guidance at 21). Second, the lens 36 is only on top of the reflective cup 32 and substrate 30 and does not surround the entire LED package. For the reasons above, Mok fails to render obvious claim 22.

Park discloses a single lens sheet mounted on top of a LED package 300. Similarly, Li discloses a lens above each packaged LED source. Neither reference teaches that the lens element *surrounds* each packaged solid state lighting device. A POSITA would understand that a lens sitting on top of or above an LED package is different than the claimed limitation which requires a lens surrounding individual LED packages. Petitioner does not offer compelling evidence that a POSITA would find Li to teach a lens that surrounds the packaged LED; Li discloses the lens *above* each LED source. Petitioner's expert argues that “surrounding the LEDs with the lens placed above allows for greater amounts of light to be captured by the lens,

leading to more uniform lighting as sought by Li” (Ex. 1036 at ¶63). Petitioner’s expert does not address how the reflector component would interact with Li’s other disclosures, specifically reflector 2 “small apertures 21” (Ex. 1033 at 8) or Figs. 1 and 5 which illustrate the reflector 2 being the same size as the LEDs. Indeed, Li describes that these embodiments allow for “good uniform light illuminance” (Ex. 1033 at 8). Li explicitly discloses that a lens *above* the LEDs and small apertures fitting snug around the LEDs results in improved lighting performance. It is therefore not clear why a POSITA would be motivated to modify this disclosure as proposed by Petitioner.

None of the prior art references render claim 22 obvious.

VIII. CLAIM 23

“wherein the generally planar diffuser contacts the sidewalls of the reflector with no intervening elements”

Epstein’s Fig. 11 (shown below) demonstrates guiding layer 610 on intermediate layer 622. LED 620 is the only element in contact with the sidewalls of intermediate layer 622. Epstein does not disclose that guiding layer 610 contacts the sidewalls of the layer 622. Petitioner’s expert declaration recites “the diffuser (guiding layer 610) is in direct contact with the reflector (intermediate layer 622).” (Ex. 1036 at ¶65). Neither Petitioner nor their Expert has explained what constitutes the sidewalls or how the layer 610 contacts the sidewalls of layer 622.

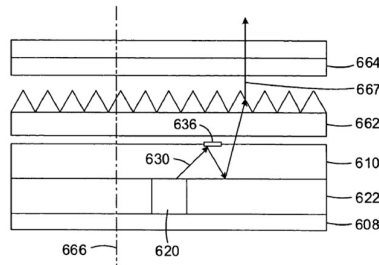
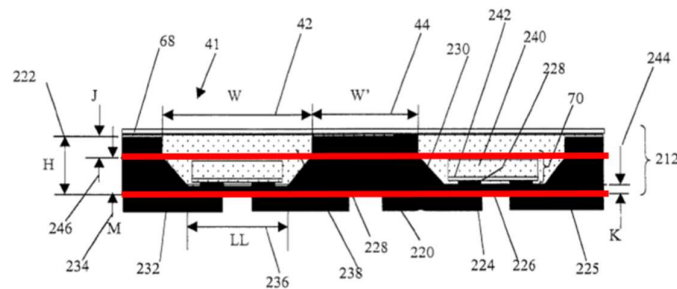


FIG. 11

Petitioner again asserts that the sidewall 230 of Holman satisfies the claimed reflector. As noted above with respect to claim 21[h], this is incorrect. Even assuming that the sidewall 230 is the reflector, Holman discloses that the sidewall is “sloped at an angle, α ... and covers a height M, 234, that is made approximately equal to the thickness of the LED chip 70” (Ex. 1006 at 38). Fig. 13 is shown below with red annotations that demonstrate the height of the sidewall. The sidewall does not contact diffuser 68. Therefore, Holman does not demonstrate a diffuser that contacts the sidewalls of a reflector with no intervening elements.

FIG. 13.



IX. CONCLUSION

PO submits that none of the prior art references, individually or in combination, render the proposed substitute claims obvious.

Respectfully Submitted,

/Neal Massand /
Neal Massand (Reg. No.
54,296)
nmassand@nilawfirm.com
Ni, Wang & Massand, PLLC
8140 Walnut Hill Lane, Suite
500
Dallas, Texas 75231
(t) (972) 331-4600
(f) (972) 314-0900

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that the above-captioned Mandatory Notice was served on counsel of record for the Petitioner by filing this document through the Patent Review Processing System as well as by delivering a copy via electronic mail to:

MFerrario@kilpatricktownsend.com (Lead Counsel)
MMorlock@kilpatricktownsend.com (Back-Up Counsel)

Dated November 05, 2024

/Neal Massand/
Neal Massand (Reg. No.
54,296)