Filed: February 22, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

XU PEICHENG (HONG KONG) OPTOELECTRIC TECHNOLOGY CO., LIMITED,
Petitioner
v.

SEMISILICON TECHNOLOGY CORP.,
Patent Owner

Case IPR2024-00157

Patent No. 8,124,988

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I. INTRODUCTION 1

II. THE '988 PATENT 2

III. THE PETITION SHOULD BE DENIED BECAUSE IT LACKS THE NECESSARY DEGREE OF PARTICULARITY FOR EACH OF ITS IDENTIFIED GROUNDS 10

A. The Petition Fails to Articulate the Basis for Obviousness Grounds 1- 7 12

1. Grounds 1, 3, and 5 Do Not Explain Why or How the Claims Are Obvious in View of the "General Knowledge of a POSITA" 13

2. Grounds 2, 4, 6, and 7 Are Inconsistent with Grounds 1, 3, and 5 with Respect to Reliance on the "General Knowledge of a POSITA" 16

B. The Petition Does Not Explain Any Motivation for Modifying the Primary References 18

C. The Petition Fails to Show Reasonable Expectation of Success 22

IV. THE PETITION SHOULD BE DENIED FOR RELYING ENTIRELY ON A DECLARATION THAT REPEATS THE PETITION AND DESERVES NO WEIGHT 25

V. THE PETITION SHOULD BE DENIED BECAUSE IT DOES NOT ESTABLISH THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE 29

A. Ground 1 Fails to Show That Lai Meets 1[E] or 1[H] 30

B. Ground 3 Fails to Show that Morgan Meets 1[E] or 1[H] 33

C. Ground 3 Fails to Show That Morgan Meets 16[B] 35

D. Ground 3 Fails to Show That Morgan Meets 21[D] 38

E. Ground 5 Fails to Show That Allsop in View of the General Knowledge of a POSITA Meets "A Plurality of Light Emitting Diodes" in 16[A] 39

F. Ground 5 Fails to Show That Allsop Meets "Four Electric Conductivity Supports" in 16[A] 43

G. Grounds 2, 4, 6, and 7 Fail Because Grounds 1, 3, and 5 Fail.....45

VI. CONCLUSION.....46

TABLE OF AUTHORITIES

Page(s)

Cases

Adaptics Ltd. v. Perfect Co.,
IPR2018-01596, Paper 20 (Mar. 6, 2019) 11

Advance Medical Designs, Inc. v. Corbin Clinical Resources, LLC,
PGR2023-00041, Paper No. 12 (PTAB Jan. 23, 2024).....28

Analytics for Life, Inc., v. 8825319 Canada Ltd.,
IPR2017-01742, Paper 9 (PTAB Jan. 31, 2018) 11, 15

Apple Inc. v. Corephotonics, Ltd.,
81 F.4th 1353 (Fed. Cir. 2023) 25

Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.,
876 F.3d 1350 (Fed. Cir. 2017) 22

Arendi S.A.R.L. v. Apple Inc.,
832 F.3d 1355 (Fed. Cir. 2016) 13

In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.,
676 F.3d 1063 (Fed. Cir. 2012) 22

In re Dow Chemical Co.,
837 F.2d 469 (Fed. Cir. 1988) 22

Front Row Techs., LLC v. MLB Advanced Media, L.P.,
IPR2015-01932, Paper 7 (PTAB Mar. 25, 2016).....15

Google Inc. v. EveryMD.com LLC,
IPR2014-00347, Paper 9 (PTAB May 22, 2014) 11

Graham v. John Deere Co. of Kansas City,
383 U.S. 1 (1966).....10

Harmonic Inc. v. Avid Tech., Inc.,
815 F.3d 1356 (Fed. Cir. 2016) 10, 29

Heart Failure Techs., LLC v. Cardiokinetix, Inc.,
IPR2013-00183, Paper 12 (PTAB Jul. 31, 2013) 18

Hebei Huatong Wires and Cables Group Co, Ltd. v. Gulf Coast Downhole Technologies LLC,
IPR2023-00908, Paper No. 4 (PTAB Nov. 22, 2023) 25

Johns Manville Corp. v. Knauf Insulation, Inc.,
IPR2015-01402, Paper 18 (PTAB Oct. 21, 2015) 15, 16

KSR Int'l Co. v. Teleflex, Inc.,
550 U.S. 398 (2007) 18

LG Electronics, Inc. v. Cellular Communications Equipment LLC,
IPR2016-00197, Paper 7 (Apr. 29, 2016) 15

Samsung Electronics Co., Ltd. v. Mojo Mobility Inc.,
IPR2023-01086, Paper No. 10 (PTAB Feb. 13, 2024) 13

Samsung Electronics Co., Ltd. v. Mojo Mobility Inc.,
IPR2023-01102, Paper 11, 13 (PTAB 2024) 32, 44

Shopkick, Inc. v. Novitaz, Inc.,
IPR2015-00279, Paper 7 (PTAB May 29, 2015) 11, 17

Upjohn Co. v. Mova Pharm. Corp.,
225 F.3d 1306 (Fed. Cir. 2000) 32, 44

WBIP, LLC v. Kohler Co., 829 F.3d 1317, 1327 (Fed. Cir. 2016) 18

Wellmatics, LLC et al. v. Canatex Completions Solutions, Inc.,
IPR2023-01149, Paper No. 8 (PTAB January 8, 2024) 28

Xerox Corp. v. Bytemark, Inc.,
No. IPR2022-00624, Paper 12, 5 (PTAB Feb. 10, 2023) 24, 25

Zetec, Inc. v. Westinghouse Elec. Co.,
IPR2014-00384, Paper 10 (PTAB July 23, 2014) 11

Statutes

35 U.S.C. § 312 1

35 U.S.C. § 312(a)(3).....10, 29

35 U.S.C. § 314(a) 10, 11

Administrative Procedure Act.....25

Regulations

37 C.F.R. § 42.65(a).....25

37 C.F.R. § 42.104(b)(4).....10

84 Fed. Reg. 64, 280 (Nov. 21, 2019) 10

I. INTRODUCTION

Patent Owner Semisilicon Technology Corp. respectfully requests that the Board deny institution of Petitioner Xu Peicheng (Hong Kong) Optoelectronic Technology Co., Limited's Petition challenging claims 1-17, 20, and 21 of U.S. Patent No. 8,124,988 ("the '988 Patent") (Ex. 1001).

The Petition should be rejected for lacking the "particularity" required by 35 U.S.C. § 312. Several independent reasons support denying institution. The Petition raises seven obviousness grounds that, for the most part, fail to identify the differences between the cited references and the claims. Petitioner does not articulate any motivation for a Person of Ordinary Skill in the Art (POSITA) to modify or combine one reference with another. Petitioner does not explain – and in several instances does not even allege – a reasonable expectation of success in modifying the primary reference. In other words, none of the grounds sets forth an adequate obviousness analysis under the four *Graham* factors. Instead, all seven obviousness grounds rely on conclusory statements to bridge canyons between the claim language and the reference disclosures.

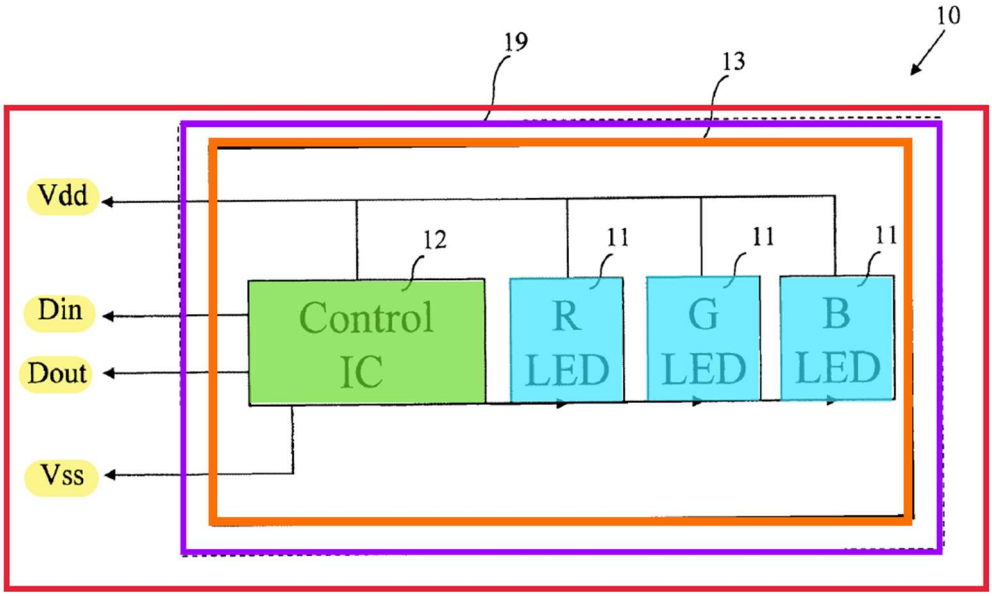
The sole support for the Petition's obviousness positions, the declaration of Dr. Schubert, offers no analysis, cites no supporting evidence, and provides no expert opinion that is not a carbon copy of the Petition. Petitioner's conclusive expert declaration merely repeats attorney arguments in the Petition, and not only fails to

provide the required analysis but also highlights the Petition's flaws in leaping to conclusions of obviousness based on attorney argument alone and without evidentiary support. Because the declaration merely parrots the conclusory attorney arguments with nothing more, this Board's precedent mandates that such expert declaration must carry no weight. In other words, the Petition cannot stand because all its grounds, fatal deficiencies aside, consist entirely of unsupported and conclusory attorney argument.

For these reasons and the additional reasons set forth below, the Petition should be denied.

II. THE '988 PATENT

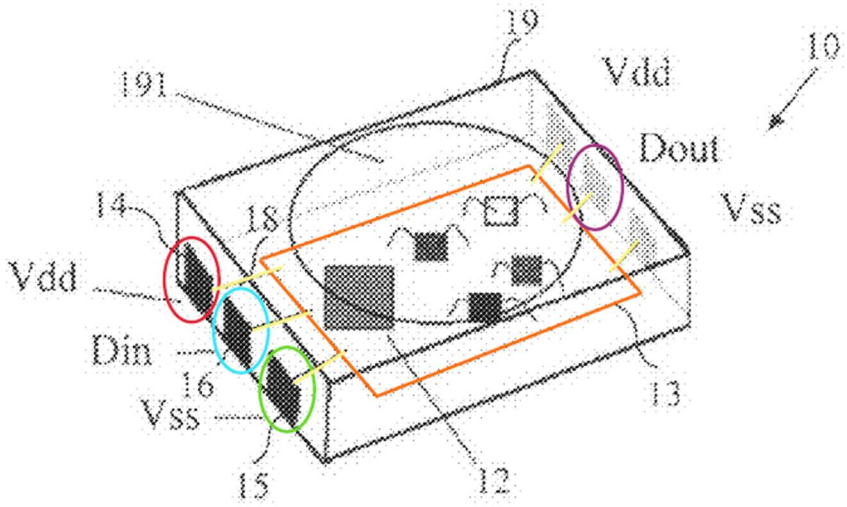
The '988 patent discloses embodiments of an LED lamp package structure, having a package body that encapsulates at least portions of light emitting diodes, control circuitry, and conductive supports. Ex. 1001, Title, Abstract, 1:53-3:20. Figure 1 shows a circuit block diagram of a disclosed embodiment:



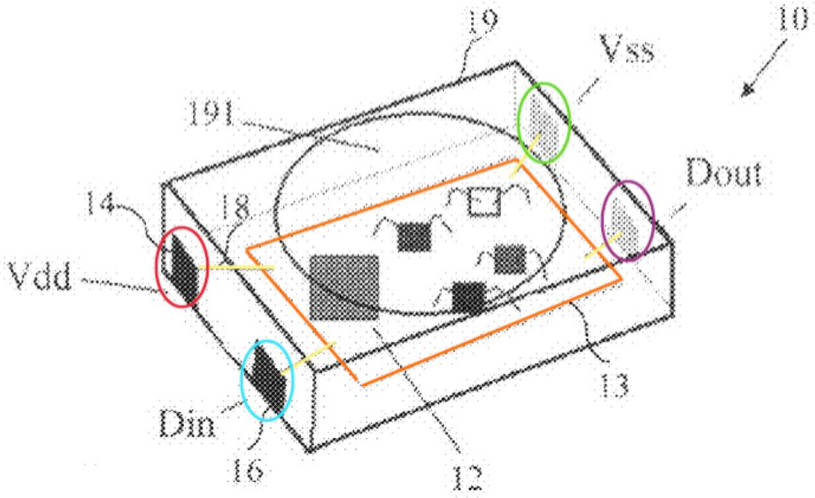
'988 Patent (Ex. 1001), Fig. 1 (annotated)

As shown in Fig. 1, an **LED lamp 10** (circled in **red**) has a **package body 19** (circled in **purple**) that encapsulates a **circuit board 13** (circled in **orange**) mounted with a plurality of **LEDs 11** (highlighted in **blue**), a **control IC 12** (highlighted in **green**), and portions of **electric conductivity supports** (highlighted in **yellow**), including a Vdd end, a Din end, a Dout end and a Vss end. Each electric conductivity support has a portion exposed outside the package body 19, and the four electric conductivity supports are electrically connected to the circuit board 13 inside the package body 19.

Figs. 4A and 4B illustrate examples of the interior structure of the disclosed LED lamp, showing details of the LED lamp structure's package body including a rectangular shape and a light emitting window 191:



'988 Patent (Ex. 1001), Fig. 4A (annotated)



'988 Patent (Ex. 1001), Fig. 4B (annotated)

As shown in Figs. 4A and 4B, above, **circuit board 13** (in **orange**) is electrically connected with multiple electrodes, including a first **electrode 14** (a positive DC voltage pad, "Vdd" circled in **red**), a second **electrode 15** (a negative DC voltage pad, "Vss" circled in **green**), a third **electrode 16** which is a data input

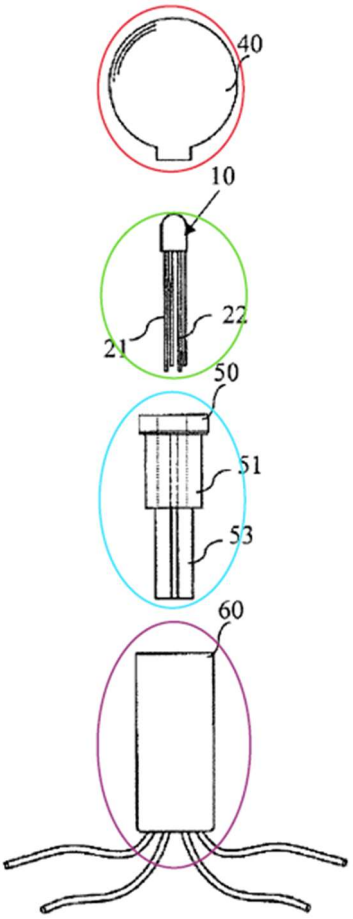
pad ("Din" circled in **blue**), and a fourth **electrode** which is a data output pad ("Dout" circled in **purple**), via **conductive metal wire 18** (highlighted in **yellow**).

Independent claims 1, 16, and 21 are directed to various embodiments of the LED lamp package structure or light emitting diode lamp assembly. Independent claim 1 recites, among other things, a first conductor being the positive DC voltage pad, a second conductor being connected to the data input electrode, a third conductor being connected to the data output electrode, and a fourth conductor being the negative DC voltage pad (Ex. 1001, 8:27-53), illustrated in Figs. 4A and 4B, above.

Independent claim 1 further recites a control integrated circuit receiving external control data via the data input electrode to control the illumination state of each light emitting diode according to the external control data. Ex. 1001, 8:27-53.

Independent claim 16 recites, among other things, light emitting diodes and four electric conductivity supports encapsulated in a package body, a lampshade covering the package body, and the perforation accommodating the light emitting diodes and enabling the four electric conductivity supports to expose outside the body. Ex. 1001, 9:49-63. These elements of claim 16 are illustrated in Figs. 12-14 of the '988 Patent.

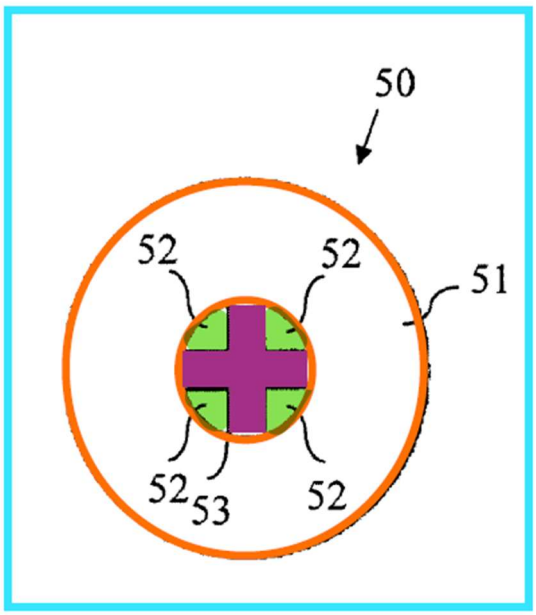
As shown in Fig. 12, an example of the LED lamp assembly includes a **lampshade 40** (circled in **red**), a **LED lamp 10** (circled in **green**), a **socket 50** (circled in **blue**) and a mount 60 (circled in **purple**).



'988 Patent (Ex. 1001), Fig. 12 (annotated)

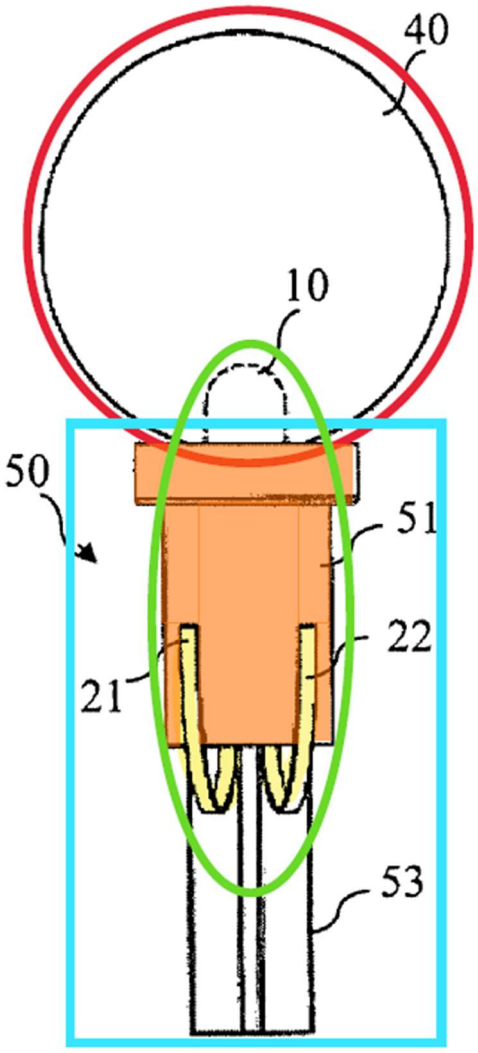
Fig. 13, below, illustrates a **socket 50** (circled in **blue**) having a **body 51** (annotated in **orange**), with a **perforation 52** (highlighted in **green**) and a **plug-in member 53** (highlighted in **purple**) extended from the bottom of the body 51. The

perforation 52 is divided into four small holes by the cross-shaped plug-in member 53:



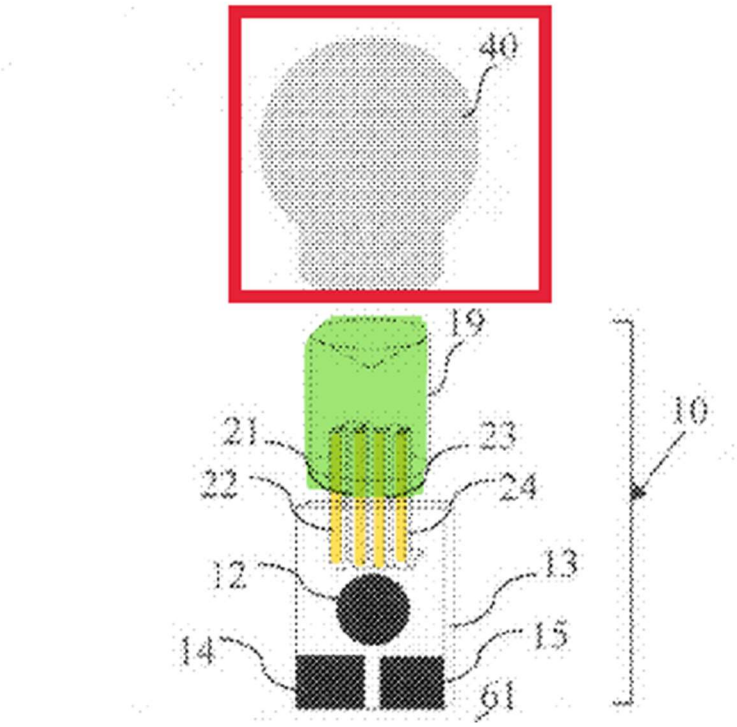
'988 Patent (Ex. 1001), Fig. 13 (annotated)

Fig. 14, below, illustrates an assembly including a **lampshade 40**, a **LED lamp 10** and a **socket 50**, the LED lamp assembly is assembled by covering the package body of LED lamp 10 with the lampshade 40 then the LED lamp is mounted into the socket 50, and when the body 51 accommodates the LED lamp 10, the four electric conductivity supports (including **electric conductivity supports 21 and 22**, highlighted in **yellow**) become exposed outside the **body 51** (highlighted in **orange**):



'988 Patent (Ex. 1001), Fig. 14 (annotated)

Independent claim 21 recites, among other things, a package body encapsulating a plurality of light emitting diodes and four electric conductivity supports, and a lampshade covering the package body of the light emitting diode lamp. Ex. 1001, 10:14-33. These elements of claim 21 are illustrated in Fig. 9:



'988 Patent (Ex. 1001), portion of Fig. 9 (annotated)

As shown in Fig. 9, a **package body 19** (highlighted in **green**) encapsulating a plurality of light emitting diodes and **four electric conductivity supports** (highlighted in **yellow**), and a **lampshade** (circled in **red**) covering the package body of the light emitting diode lamp.

The Petition has not established that any of the cited references disclose these combinations of elements of the independent claims. The Petition also fails to establish that these combinations were within the general knowledge of a POSITA.

During examination, the Office considered the elements discussed above and other elements of the claims to be reasons for allowance. Ex. 1002 at 176-180.

Indeed, after an appeal brief filed on September 19, 2011, the Office withdrew all rejections and allowed all claims with the claim limitations discussed above. *Id.*

III. THE PETITION SHOULD BE DENIED BECAUSE IT LACKS THE NECESSARY DEGREE OF PARTICULARITY FOR EACH OF ITS IDENTIFIED GROUNDS

To institute *inter partes* review, there must be "a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition." 35 U.S.C. § 314(a). An IPR petition must identify "with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim." 35 U.S.C. § 312(a)(3). "The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon . . ." 37 C.F.R. § 42.104(b)(4). The burden to show unpatentability with particularity is on the petitioner. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). Petitioners should "focus on concise, well-organized, easy-to-follow arguments supported by readily identifiable evidence of record." Office Patent Trial Practice Guide, November 2019 Ed., 84 Fed. Reg. 64, 280 (Nov. 21, 2019).

To allege obviousness, Petitioner must address (i) the scope and content of the prior art, (ii) differences between the claimed subject matter and the prior art, (iii) the level of skill in the art, and (iv) objective evidence of nonobviousness. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). The Board has made

clear that petitioners must "meaningfully" address at least the first two *Graham* factors: (i) the scope and content of the prior art, and (ii) any differences between the claimed subject matter and the prior art. *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9 at 23–25 (PTAB May 22, 2014).

The Board has denied petitions that lack particularity or present deficient or conclusory analysis like the Petition here. *See Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 24 (Mar. 6, 2019) (exercising § 314(a) discretion to deny institution because the petition lacked particularity). Institution is not warranted if a petition lacks a clear statement of the relief requested and a thorough explanation of the alleged unpatentability grounds. *See, e.g.*, *Shopkick, Inc. v. Novitaz, Inc.*, IPR2015-00279, Paper 7 at 29 (PTAB May 29, 2015). Nor is institution warranted when a petition fails to "adequately tie the evidence of the references to specific claim limitations." *Zetec, Inc. v. Westinghouse Elec. Co.*, IPR2014-00384, Paper 10 at 14 (PTAB July 23, 2014). The Petition here is deficient for all these reasons.

Like other obviousness grounds that the Board has denied institution, this Petition provides "no analysis, argument or rationale explaining what would have been obvious and why." *See Analytics for Life, Inc., v. 8825319 Canada Ltd.*, IPR2017-01742, Paper 9 at 30 (PTAB Jan. 31, 2018).

A. The Petition Fails to Articulate the Basis for Obviousness Grounds 1- 7

The Petition should be denied for failing to clearly articulate the obviousness grounds for each of independent claims 1, 16, and 21. Petitioner relies heavily on the "general knowledge of a POSITA" for essentially all its grounds, but provides no explanation of the differences, no motivation to combine or modify, and no discussion of likelihood of success. The Petition asserts obviousness of independent claim 1 in Grounds 1 and 3, asserts obviousness of independent claim 16 in Grounds 3 and 5, and asserts obviousness of independent claim 21 in Ground 3. Pet. at 2-3.

In addressing the independent claims and additional dependent claims, Grounds 1-5 cite the "general knowledge of a POSITA" as part of the obviousness grounds. *Id*. On the other hand, when the Petition asserts obviousness of claim 15, which is dependent from claim 1, obviousness Grounds 6 and 7 do not state "general knowledge of a POSITA" in the Statement of Precise Relief Requested or within Grounds 6 and 7 themselves. Pet. at 2-3, 95-99. As explained below with respect to Grounds 1, 3, and 5 – the grounds addressing all independent claims, the Petition does not explain how or why any of the primary references are modified or combined with the "general knowledge of a POSITA," and indeed, there is no clear explanation of obviousness in any of these grounds.

1. Grounds 1, 3, and 5 Do Not Explain Why or How the Claims Are Obvious in View of the "General Knowledge of a POSITA"

In each of Grounds 1, 3, and 5, Petitioner alleges obviousness based on one of Lai, Morgan, or Allsop, in view of the general knowledge of a POSITA. Pet. at 2-3, 5, 34, and 88. These grounds are problematic on their face for relying on the "general knowledge of a POSITA" to supply missing claim limitations. Binding precedents have made it clear that "references to common sense, whether to supply a motivation to combine or a missing patent claim limitation, cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified."[1] *Samsung Electronics Co., Ltd. v. Mojo Mobility Inc.,* IPR2023-01086, Paper No. 10 at 20 (PTAB Feb. 13, 2024) (institution denied) (internal quotations omitted) (citing *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361-62 (Fed. Cir. 2016)).

More troublesome, the Petition does not explain how or why the "general knowledge of a POSITA" is used in the obviousness combinations. Indeed, the Petition does not even attempt to address the first two *Graham* obviousness factors,

[1] Grounds 2 and 4 fail for the same reason. For the purposes of evaluating institution, however, this discussion focuses on Grounds 1, 3, and 5 which address all challenged independent claims.

because Grounds 1, 3, and 5 do not: 1) identify the scope and content of Lai, Morgan, or Allsop; or 2) acknowledge any differences between these references and the claims. Instead, Petitioner cites portions of the primary references for every claim element, and then conclusively asserts that a POSITA would have understood that the cited part of the reference meets the claim element. No explanation was made as to the difference between the reference and the claim element or how the POSITA's general knowledge "meets" the claim element or such difference. In **no less than thirty-nine instances**, Petition makes such unsupported assertions about what "a POSITA would have understood," or other similar assertions such as what a POSITA would have "been aware of," "realized," etc., in Grounds 1-5 to bridge gaps between the references and the claim language. *See*, Pet. at 8, 10-12, 14-16, 20, 22-24, 27, 29-30, 32-34, 36, 37, 39-44, 49, 50, 52, 54, 56, 59, 69, 73, 83, 90, 93, 94, 95. Each of the thirty-nine assertions lacks any acknowledgement of a deficiency or difference between the references and the claims.

Here, Petitioner has left it to Patent Owner and the Board to speculate on which of the features of the asserted art differs from the claims and how the asserted art or its teaching would have been modified. Without the Petition's identification of differences between the claims and the primary reference, it is impossible to determine whether the Petitioner asserts that claim elements 1) are disclosed by the

reference, 2) are inherent in the reference, 3) are lacking in the reference and are disclosed elsewhere, or 4) are obvious for other undisclosed reasons.

The absence of articulated differences also "renders it difficult to present, and have a patent owner and the Board analyze, whether a petitioner has set out 'some articulated reasoning with [some] rational underpinning to support the legal conclusion of obviousness.'" *Analytics for Life*, IPR2017-01742, Paper 9 at 14; *see also Front Row Techs., LLC v. MLB Advanced Media, L.P.*, IPR2015-01932, Paper 7 at 17 (PTAB Mar. 25, 2016) (denying institution for failure to identify "any differences between the prior art . . . and the claims at issue, or provide a substantive analysis of why or how a person of ordinary skill in the art would have modified the prior art to render the claims obvious.").

The Petition fails to explain what modifications are being proposed to the primary reference, or what the resulting combination/modification would be. The Board has denied institution due to "[f]ailure on the part of a petitioner to explicitly identify a difference complicates an evaluation of obviousness." *Johns Manville Corp. v. Knauf Insulation, Inc.*, IPR2015-01402, Paper 18 at 12-14 (PTAB Oct. 21, 2015); *see also LG Electronics, Inc. v. Cellular Communications Equipment LLC*, IPR2016-00197, Paper 7 at 11 (Apr. 29, 2016) (denying institution because the petition "does not explain what differences between the challenged claims and [the primary reference] are being addressed by [the secondary reference].") The Petition

should be denied for failure to make all arguments accessible to the Board and requiring the Board "to play archaeologist with the record." *Johns Manville Corp.*, IPR2015-01402, Paper 18 at 12-14.

2. Grounds 2, 4, 6, and 7 Are Inconsistent with Grounds 1, 3, and 5 with Respect to Reliance on the "General Knowledge of a POSITA"

The Petition relies on the "general knowledge of a POSITA" in such an inconsistent manner that it is practically impossible to understand what Petitioner's positions on obviousness are. Grounds 1, 3, and 5 address independent claims 1, 16, and 21, and each of these grounds relies on a primary reference in combination with the general knowledge of a POSITA. Pet. at 2-3. Grounds 2, 4, 6, and 7 address claims that depend from claim 1, 16, or 21. Each of these dependent claim grounds cites to the general knowledge of a POSITA differently than the ground addressing the base independent claim. The Petition's conflicting and irreconcilable positions regarding the "general knowledge of a POSITA," standing alone, highlight the conclusive, speculative, and meritless nature of Petitioner's sweeping obviousness positions.

For example, Ground 1 alleges obviousness of independent claim 1 (and other dependent claims) based on Lai in view of the general knowledge of a POSITA. Pet. at 2. Ground 2 addresses claims that depend from claim 1, and adds the Stoyan reference. *Id.* However, the alleged basis for Ground 2 is *not* Lai in view of the

general knowledge of a POSITA and further in view of Stoyan, as one would expect for consistency with Ground 1. Instead, the relief requested in Ground 2 is obviousness based on "Lai in view of Stoyan and in further view of the general knowledge of a POSITA." *Id.* Even more confusing, Ground 6 addresses claim 15 which depends from claim 1 (addressed in Ground 1). *Id.,* 2-3. Whereas Ground 1 combines Lai with "the general knowledge of a POSITA," the stated relief requested for Ground 6 does not mention "the general knowledge of a POSITA" at all. *Id*., 3. Grounds 3, 4, and 7 are problematic for the same reasons. *Id*., 2-3.

The statement of relief requested on pages 2-3 of the Petition is anything but precise and raises questions about what Petitioner intends as the basis for obviousness of each claim. The Petition lacks vital explanation and clarity about what the Petitioner's proposed grounds are, and how the references and the supposed "general knowledge" are combined in these self-conflicting grounds. Given the Petition's nebulous reliance on the "general knowledge of a POSITA," the Petition should be denied, because there is no clear statement of the relief requested and a thorough explanation of the unpatentability grounds. *See, e.g.*, *Shopkick,* IPR2015-00279, Paper 7 at 29.

B. The Petition Does Not Explain Any Motivation for Modifying the Primary References

Each of the seven obviousness grounds lacks a clear articulation of a motivation to combine or modify the references. "Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). A complete obviousness analysis requires that the Petition include an "explanation of how the teachings of the references would be arranged or combined or why a person of ordinary skill would have made the combination" and "some reason why a person of ordinary skill in the art would have thought to combine particular available elements of knowledge, as evidenced by the prior art, to reach the claimed invention." *Heart Failure Techs., LLC v. Cardiokinetix, Inc*., IPR2013-00183, Paper 12, at 9 (PTAB Jul. 31, 2013) (citing *KSR Int'l Co. v. Teleflex, Inc*., 550 U.S. 398, 418 (2007). By failing to do so here, the Petition fails to establish a reasonable likelihood of success for any ground.

For example, Ground 1 alleges that claim 1 is obvious based on Lai in view of the general knowledge of a POSITA. Pet. at 2. Petitioner relies upon what "a POSITA would have understood" *at least seven times* to bridge gaps between Lai's disclosure and independent claim 1. Pet. at 8, 10-12, 14. Not once does Petitioner ever explain what is missing from Lai, or provide any factual underpinnings to

reason why or how a POSITA would have been motivated to modify Lai based on the general knowledge of a POSITA to reconstruct the claimed invention.

In Ground 3, Petitioner repeats the same pattern in addressing independent claims 1, 16, and 21, invoking the knowledge of a POSITA again without acknowledging any deficiencies in Morgan or alleging any motivation to modify Morgan. *See Id.*, 36, 37, 39-44, 59, 73, and 78. Assertions were made about control circuitry in Morgan, "power input leads," various types of transistors that are not disclosed in Morgan, LED cathodes and anodes, and general knowledge about electrical circuits. *Id.*, 39-41. But no evidence is cited for these assertions that purportedly bridges gaps between the claim language and Morgan. Dr. Schubert's declaration is similarly lacking by repeating the petition verbatim, which cannot carry any weight as discussed in further detail below in Section IV.

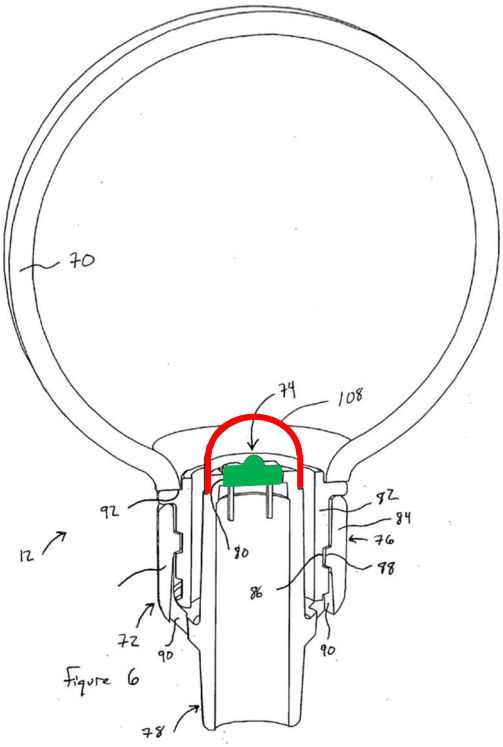
Referring still to Ground 3, Petitioner never alleges that Morgan discloses a "DC voltage pad" claimed in 1[E], and instead asserts that "[a] POSITA would further understand the first conductor *to act as* a positive DC voltage pad." *Id.*, 40 (emphasis added). Here, Petitioner implicitly acknowledges that Morgan does not disclose the claimed structure, yet does not explain why a POSITA would have been motivated to change Morgan's existing circuitry, to include a DC voltage pad, or explain how such a modification would affect the design and operation of other components in Morgan. For these additional reasons, Ground 3 fails to sufficiently

set forth an adequate obviousness analysis including reasoned motivation to modify Morgan to meet independent claim 1.

Ground 5 also addresses independent claim 16 and lacks sufficient reasoning for modifying Allsop based on the general knowledge of a POSITA. Ground 5 largely repeats the same deficient pattern of discussing what "a POSITA would have understood" without acknowledging any deficiencies or explaining motivations to modify Allsop to meet the claimed invention. *See* Pet. at 90, 93-95.

In discussing 16[A] in Ground 5, Petitioner cites Allsop's disclosure of a LED circuit board 100 having a *single* LED mounted thereon, and then alleges that "it would be an obvious and simple modification to explicitly include two separate LEDs in Allsop's lighting element assembly." *Id*., 88-89 (citing Allsop at [0040]). Petitioner also suggests, incorrectly, that Allsop discloses multiple LEDs, by disclosing "any other color output by LED's." *See* Allsop at [0040]. Notably, the cited paragraph of Allsop discloses outputting any color by a *single* LED 74, and Allsop does not mention using multiple LEDs to create combined colors. In fact, Allsop discloses a technique for reproducing combined colors with a single LED: "phosphorescent coating over the LED results in light having wavelengths other than those output by the LED. *Id*. Thus, Petitioner does not identify any actual deficiency in Allsop warranting the addition of more LEDs (such as red and blue LEDs as Petitioner alleges) to reconstruct 16[A]. *See* Pet. at 89.

Petitioner also does not explain why a POSITA would have found it obvious to add multiple LEDs to the specific device in Allsop to reconstruct 16[A], or why a POSITA would have been motivated to add multiple LEDs within shield 108 that is hardly large enough to fit the existing single lighting element seat 80 with lighting element 74:



*Allsop (Ex. 1008) Fig 6 (annotated highlighting **shield 108** in **red** and **lighting element seat 80 with lighting element 74** in **green**)*

Therefore, Ground 5, like Grounds 1, and 3, is fatally flawed for lacking a complete obviousness analysis required for institution. The Board should deny institution for these additional reasons.

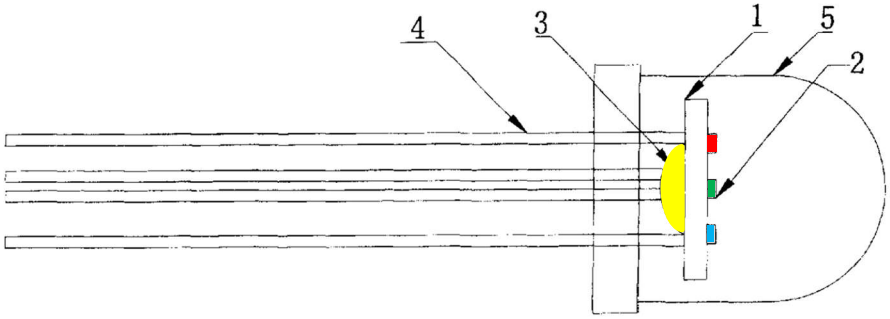
C. The Petition Fails to Show Reasonable Expectation of Success

Each of the seven obviousness grounds fails to allege or explain a reasonable expectation of success in modifying the primary reference. "[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so.'" *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)). "[T]he expectation of success must be founded in the prior art, not in the applicant's disclosure." *In re Dow Chemical Co*., 837 F.2d 469, 473 (Fed. Cir. 1988). Petitioner has failed to carry its burden in establishing a reasonable expectation of success as required for a complete obviousness analysis; therefore, institution should be denied.

Regarding Grounds 1, 3, 5, 6, and 7, the Petition does not even attempt to allege a reasonable expectation of success. Nowhere in Ground 1 (Pet. at 5-28), Ground 3 (Pet. at 34-82), Ground 5 (Pet. at 88-95), Ground 6 (Pet. at 95-97), or Ground 7 (Pet. at 98-100) does the Petition discuss a "reasonable expectation of success" or anything equivalent.

Grounds 2 and 4 include a bare assertion that "a POSITA . . . would have had a reasonable expectation of success." Pet. at 30, 32, 84, and 86. Aside from reciting these words, the Petition does not sufficiently explain why a POSITA would have

reasonably expected success. In Ground 2, for example, Petitioner does not explain how or why a POSITA would have modified Lai's substrate 1 to mount both the control IC board (3) and the LED chips (2) on the same side of the substrate, especially in view of Lai's figures showing that the IC control board (3) occupies most of the space on one side of substrate (1) and the LED chips (2) occupy most of the space on the other side of substrate (1):



*Lai (Ex. 1005), Fig. 2 (annotated showing **LED chips 2** in **red**, **green**, and **blue**, and **control IC board 3** in **yellow**)*

The Petition conclusively states that mounting the LEDs and control IC on the same side was one of "two options" that would "facilitate the fabrication process," Pet. at 30, but does not address the space constraints of Lai's substrate, or explain why a POSITA would have expected to be successful in revamping the design and fabrication process of Lai's circuitry.

Ground 4 is no better. The petition repeats the same conclusions as Ground 2, and alleges a POSITA would have expected success in modifying Morgan to mount

controller 26 and LEDs on the same side of the substrate, and that such a modification would "facilitate[] manufacturing." Pet. at 84. Morgan teaches the opposite: Morgan specifically teaches mounting LEDs 408, 410, and 412 on the top side of a lighting module 900 while mounting controller 26 on the "bottom or opposite side," and states that "[o]ne of the reasons for this construction is that the lighting module 900 **may be so small that the three LEDs and the controller cannot fit on the same side**." Morgan (Ex. 1007) at [0144] (emphasis added). This directly contradicts the Petition, and neither Petitioner nor its expert address this teaching in Morgan or explain why a POSITA would have reasonably expected success in doing precisely the opposite of what Morgan teaches.

In Grounds 2 and 4, the sole basis the Petition cites for a reasonable expectation of success is Dr. Schubert's declaration (Ex. 1003), but that the cited paragraphs simply repeat the Petition verbatim without saying anything more. *See* Ex. 1003 ¶¶ 79, 86, 161, and 168. This expert testimony is entitled to no weight. *Xerox Corp. v. Bytemark, Inc.*, No. IPR2022-00624, Paper 12, 5 (PTAB Feb. 10, 2023).

For the reasons above, each of obviousness Grounds 1-7 lacks a sufficient showing of reasonable expectation of success, and the Petition should be denied.

IV. THE PETITION SHOULD BE DENIED FOR RELYING ENTIRELY ON A DECLARATION THAT REPEATS THE PETITION AND DESERVES NO WEIGHT

The Petition cites the declaration of Dr. Schubert (Ex. 1003) as the sole support for all obviousness positions. But the expert declaration adds nothing to the analysis in the Petition, because the declaration simply repeats unsupported attorney argument. For this additional reason, the Petition lacks the requisite analysis and evidence of obviousness needed to support institution, and none of the grounds can prevail.

Under 37 C.F.R. § 42.65(a), "[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight." According to the Director, the Board should give little weight to the Petitioner's expert where "the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner's conclusory arguments." *Xerox Corp.*, IPR2022-00624, Paper 12 at 5. The Federal Circuit has also held that "adopting an argument that the petitioner has not sufficiently made" constitutes error under the Administrative Procedure Act. *Apple Inc. v. Corephotonics, Ltd.*, 81 F.4th 1353, 1360 (Fed. Cir. 2023). Thus, when the expert's declaration is given little weight, the Board denies institution of grounds that fail to provide sufficient information to demonstrate that the combination renders the claims obvious. *See Hebei Huatong Wires and Cables Group Co, Ltd. v.*

Gulf Coast Downhole Technologies LLC, IPR2023-00908, Paper No. 4 at 18-19 (PTAB Nov. 22, 2023).

The expert declaration in this case embodies everything that the Director warned against in the *Xerox* decision. Dr. Schubert's declaration (Ex. 1003) is a *carbon copy* of the Petition grounds, repeating every word of the petition *verbatim*. The Petition includes only conclusory statements of obviousness and lacks explanations of motivations to modify any references, or a reasonable expectation of success, as explained in Section III. The declaration repeats the same conclusory statements, and says nothing more than the Petition. Below is but one example of a paragraph from the Petition and the identical corresponding expert declaration paragraph:

Petition at 12	**Declaration ¶ 44 (Ex. 1003)**
Moreover, a POSITA would have understood the terms "pad" and "pin" to both refer to a terminal which connects a device to a mounting substrate. That is, "pad" and "pin" are implementations of a terminal, with both serving the same	Moreover, a POSITA would have understood the terms "pad" and "pin" to both refer to a terminal which connects a device to, for example, a mounting substrate. That is, "pad" and "pin" are implementations of a terminal, with both serving the same

function. A POSITA would also have understood that a "pad" is a terminal having a flat shape, whereas a "pin" is a terminal having a pointed shape. EX1012 at 535 ("pad" means "[a] ***metallized area*** on the surface of an active substrate as an integral portion of the conductive interconnection pattern to which bonds or test probes may be applied."); EX.1013 ("pin" means "[a] slender, straight, stiff prong used as a terminal ...."). EX1003, ¶ 44.	function. A POSITA would also have understood that a "pad" is a terminal having a flat shape, whereas a "pin" is a terminal having a pointed shape. EX1012 at 535 (definition of "pad" to mean "[a] ***metallized area*** on the surface of an active substrate as an integral portion of the conductive interconnection pattern to which bonds or test probes may be applied.") (emphasis added); EX.1013 (definition of "pin" to mean "[a] slender, straight, stiff prong used as a terminal ….").

In the portion of paragraph 44 reproduced above, Dr. Schubert regurgitates the Petition's assertions about the meanings of "pad" (in the claims) and "pin" (in the Lai reference), and how a POSITA would have supposedly understood those terms. Dr. Schubert's declaration sets forth Petitioner's conclusory assertions as though

they are facts, rather than setting forth facts and evidence to support Petitioner's assertions, like the deficient declaration in *Xerox.*

Even more problematic is that Dr. Schubert does not explain *how* the cited references meet Petitioner's proposed definitions of certain claim terms. In the example above, the declaration and Petition cite only to a definition of "pad," which seems to be Petitioner's claim construction despite having suggested that no claim term requires construction. But the declaration does not explain how Lai's pin meets the cited definition. For example, the declaration does not explain *why* a POSITA would have understood "pins" in Lai, which the Petition admits have a "pointed shape," constitute the claimed "pad," which the Petition states is a "metalized area on the surface" and has "a flat shape." Pet. at 22. The Board should not afford weight to such conclusory expert testimony that lacks discussion of how the prior art meets the claim limitations. *See Advance Medical Designs, Inc. v. Corbin Clinical Resources, LLC*, PGR2023-00041, Paper No. 12 at 31 (PTAB Jan. 23, 2024).

Dr. Schubert's declaration is replete with such conclusory and unsupported assertions that simply repeat the Petition, and the Board should decline to afford any weight to the declaration. *See Wellmatics, LLC et al. v. Canatex Completions Solutions, Inc.*, IPR2023-01149, Paper No. 8 at 16 (PTAB January 8, 2024).

V. THE PETITION SHOULD BE DENIED BECAUSE IT DOES NOT ESTABLISH THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

As established above, the Petition should be denied because none of the grounds presents a complete obviousness analysis. The Petition also fails because it does not establish that the cited references disclose every element of the challenged claims. The grounds are replete with vast but unsubstantiated assertions about the knowledge of a POSITA and the reference disclosures, leaving the Patent Owner and the Board to struggle to understand what features of the references are being alleged to correspond to the claim elements, and what claim limitations are met by a combination or modification of references. Having stated that no claim construction is needed, the Petition nevertheless sets forth its own definitions of claim terms without any evidence in support. Despite having proposed those definitions, the Petition does not explain how the prior art disclosures meet Petitioner's own definitions. By failing to reconcile large gaps between the claim language and the applied prior art, the Petition lacks the requisite degree of particularity to meet Petitioner's burden to show unpatentability. *See Harmonic*, 815 F.3d at1363 (citing 35 U.S.C. § 312(a)(3)).

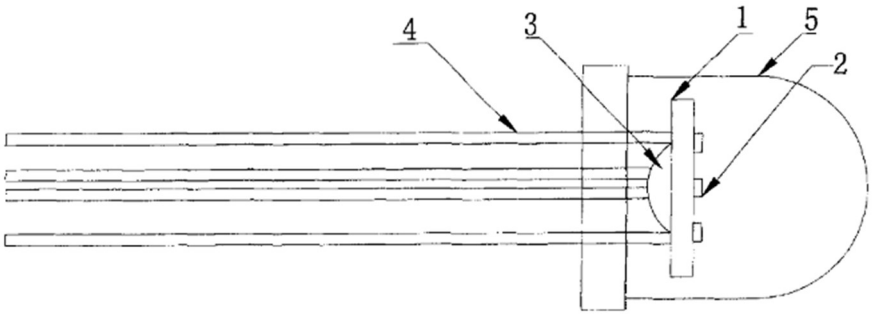
For these reasons, as further detailed below, the Petition fails to establish a reasonable likelihood of success that any of independent claims 1, 16, or 21 will be

found unpatentable over any of Lai, Morgan, Allsop, or the general knowledge of a POSITA.

A. Ground 1 Fails to Show That Lai Meets 1[E] or 1[H]

1[E] recites, in part, "the first conductor being a positive DC voltage ***pad***." 1[H] recites, in part, "the fourth conductor being a negative DC voltage ***pad***." Ex, 1001, 8:40-41, 46-47 (emphases added). The Petition has not established that the claimed voltages pads would have been obvious based on Lai.

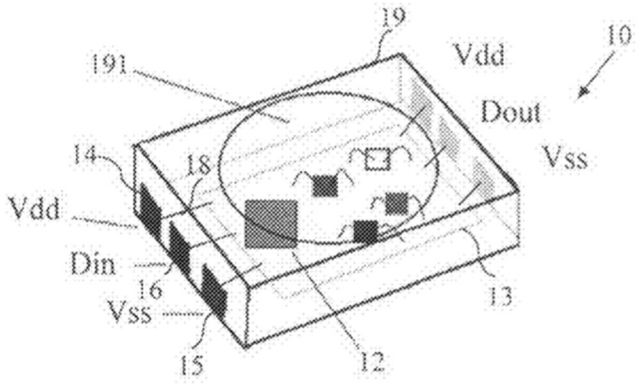
Lai does not disclose voltage pads, it discloses "pins." *See* Pet. at 11, 14. Lai illustrates pins in multiple figures, including pins 4 shown in Fig. 1:



Lai (Ex. 1005) Fig. 1 (showing pins 4)

In addressing 1[E], Petitioner describes a pin as "a terminal having a pointed shape," and cites a dictionary defining a pin as a "slender, straight, stiff prong." Pet. at 11, 12 (citing Ex. 1013). These descriptions of a pin are consistent with Lai's pins 4, shown above. Petitioner also describes a pad as "a terminal having a flat shape," and cites a dictionary defining a pad as a "metalized area on the surface of an active

substrate." Pet. at 11, 12 (citing Ex. 1012). Petitioner's descriptions of "pad" resemble the examples illustrated in the '988 patent, such as Fig. 4A showing electrodes 14, 15, and 16:



'988 Patent (Ex. 1001), Fig. 4A

The '988 patent calls electrodes 14, 15, and 16 "pads." *See* Ex. 1001 at 6:57-59. The Petition effectively concedes there exists a structural difference between Lai's pin and the claimed pad, but never reconciles this difference.

The Petition never establishes that Lai's pins constitute the claimed pads. Even if the Board were to adopt Petitioner's definitions, the Petition never explains how Lai's pins – which the Petition alleges are defined as a "pointed" or "slender, straight, stiff prong," meets the claimed pad – which the Petition alleges are defined as a "metalized area on the surface." The Petition does not propose to modify Lai's pins, and provides no explanation as to why a POSITA would have been motivated to modify Lai's pins to become pads.

Instead, Petitioner attempts to fill this void in Lai by alleging "a POSITA would have understood the VDD supply pin to act as a positive DC voltage pad." *Id*., 11*, see also id.,* 14. But claim 1 is an apparatus claim, and 1[E] and 1[H] do not recite a pin that ***acts as a pad***; the claim limitations recite and require ***a pad***. Petitioner and its expert appear to assume that Lai's pins are pads merely because they can have similar functions of making electrical connections, but these unsupported assumptions alone cannot support institution. *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) ("Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination."); *see also Samsung Electronics Co., Ltd. v. Mojo Mobility Inc.*, IPR2023-01102, Paper 11, 13 (PTAB 2024) (denying institution and affording little weight to expert testimony that is based upon assumptions).

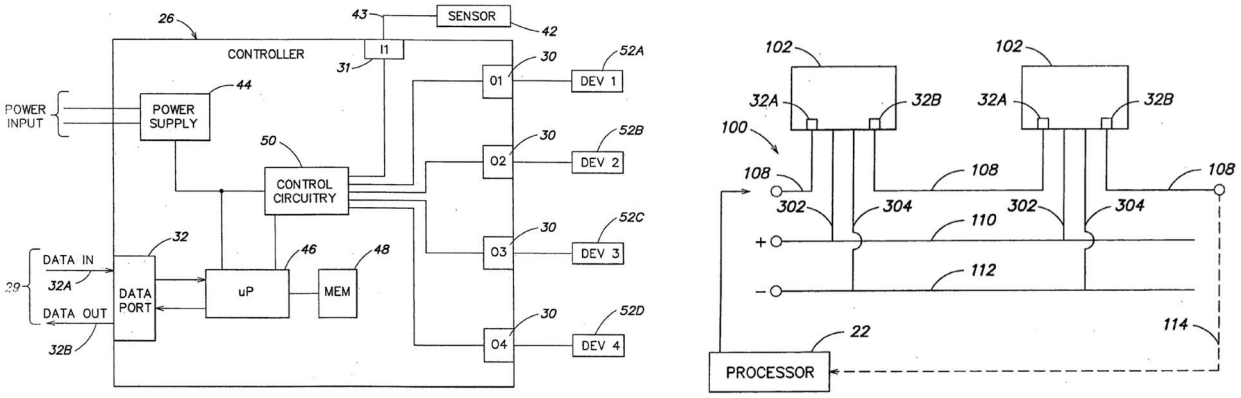
At bottom, the Petition does not attempt to reconcile the structural distinctions between the claimed pad and Lai's pin with respect to apparatus claim 1, and the Petition provides nothing more than unsupported attorney argument, plus expert statement repeating the same argument and citing no support, in an attempt to bridge gaps between Lai and the claim limitation. Therefore, Ground 1 does not establish that independent claim 1 is unpatentable.

B. Ground 3 Fails to Show that Morgan Meets 1[E] or 1[H]

1[E] recites, in part, "the first conductor being a positive DC voltage ***pad***." 1[H] recites, in part, "the fourth conductor being a negative DC voltage ***pad***." Ex, 1001, 8:40-41, 46-47 (emphases added). The Petition has not established that the claimed voltage pads would have been obvious based on Morgan.

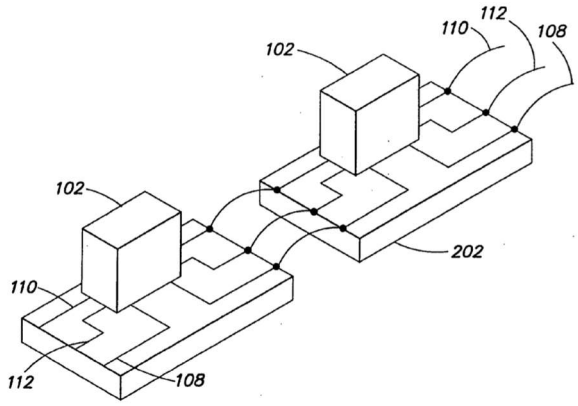
In addressing 1[E] and 1[H], the Petition cites to paragraphs [0089], [0119], and [0143] of Morgan. Pet. at 39-41, 43-44. The cited paragraphs do not disclose positive or negative DC voltage "pads." Instead, paragraph [0089] discloses "control circuitry 50, coupled to a power supply 44," paragraph [0119] discloses power 110 and ground 112 connections, and paragraph [0143] discusses conductors of a conduit 202. Notably, conduit 202 in paragraph [0143] is *separate* from the components the Petition maps to the LED lamp package structure of claim 1. *See* Pet. at 35 (bracketing items other than conduit 202). The three cited paragraphs are silent as to the structure of the electrical connections in Morgan.

Additionally, Figs. 2, 5, and 15 discussed in the cited paragraphs of Morgan do not illustrate pads. Figs. 2 and 5 (discussed in Morgan paragraphs [0089] and [0119]), respectively, show block or circuit diagrams:



Morgan (Ex. 1007), Fig. 2 (left) and Fig. 5 (right)

These figures do not illustrate the device or any structural components of Morgan, and therefore do not illustrate DC voltage pads. Fig. 15 of Morgan (discussed in Morgan paragraph [0143]) purports to show a "conduit arrangement for a lighting network," Morgan at [0059], but does not illustrate the structure of any electrical connections, let alone illustrate the claimed DC voltage pads:



Morgan (Ex. 1007), Fig. 15

Therefore, the figures discussed in cited paragraphs [0089], [0119], and [0143] also fail to establish that Morgan discloses DC voltage pads even under Petitioner's

definition; thus, Petitioner has not established that Morgan discloses the pads of 1[E] and 1[H].

Like the deficient Ground 1 based on Lai, Petitioner asserts that "[a] POSITA would further understand the first conductor ***to act as*** a positive DC voltage pad" in 1[E], and makes a similar assertion with respect to 1[H]. Pet. at 40, and 43. As explained above with respect to Lai, Petitioner does not bridge the gap between Morgan's disclosure and the claim language. This deficiency of Morgan is accentuated by the Petition's reliance on arguing that Morgan is somehow functionally equivalent to the claim language, and the Petition's inability to assert that Morgan discloses the structure that claim 1 recites. Petitioner also does not propose to modify Morgan's electrical connections to be pads, or explain why a POSITA would have been motivated to make such a modification. Instead, the Petition includes several unsupported statements about what a POSITA would have understood. Pet. at 40-41, 43-44. The Petition cites only Dr. Schubert's declaration (Ex. 1003), which repeats the same conclusory statements as the Petition verbatim and should be given no weight. Therefore, Ground 3 does not establish that independent claim 1 is unpatentable.

C. Ground 3 Fails to Show That Morgan Meets 16[B]

16[B] recites "a lampshade covering the package body of the light emitting diode lamp." Ex. 1001, 9:53-54. Importantly, "package body" in 16[B] finds

antecedent basis in 16[A], which recites "a light emitting diode lamp having a plurality of light emitting diodes and four electric conductivity supports encapsulated in a package body." *Id.*, 9:50-52. In addressing 16[A], the Petition asserts that an "optic 218 coupled to a socket 214" of Morgan is the package body of 16[A], and makes clear that optic 218 and socket 214 *together* form the claimed "package body" that encapsulates lighting system 102 in Morgan:

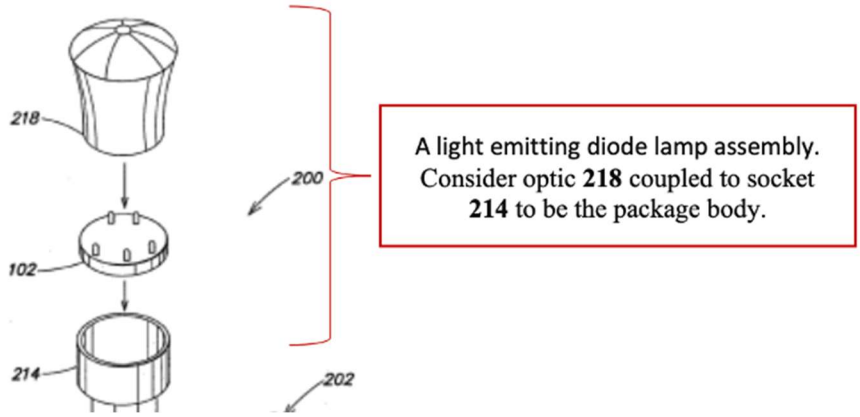


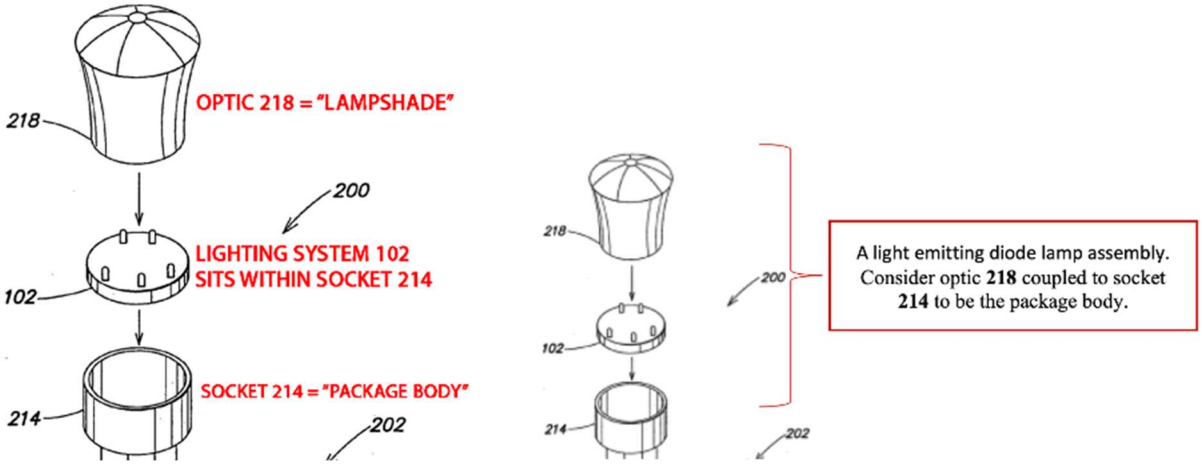
Image from Pet. at 60 (showing annotated Fig. 13 of Morgan)

Pet. at 59-61. With this backdrop, the Petition sets forth two alternative theories for 16[B], but both theories fail to establish that 16[B] is unpatentable.

In the first theory, the Petition alleges that a lampshade would have been "an obvious addition," but there is no basis for a POSITA to have found it obvious to add a lampshade over optic 218 of Morgan. *See* Pet. at 63-64. The only rationale provided in the single-paragraph obviousness analysis is that a lampshade "diffuses the light" originating from LEDs to "creat[e] a more pleasant lighting environment," and that

lampshades "reduce glare." *Id*. Even if these points are true, the Petition does not establish that Morgan's device lacks such capabilities and would have benefited from the addition of a lampshade. Quite the opposite: Morgan teaches that optic 218 "may be able to diffuse the light, redirect the light, generate a prismatic effect or otherwise affect the generated light." Ex. 1007 at [0150]. Therefore, Morgan establishes that optic 218 already provides the advantages underlying the modification in the Petition, and refutes the Petition's assertion that it would have been obvious to a POSITA to add a lampshade *over* optic 218 that already provides the same benefits.

In a second, alternative theory, the Petition identifies socket 214 alone as the "package body," effectively abandoning the Petition's mapping in 16[A] which requires optic 218 coupled to socket 214 to form a package body:



Images from Pet. at 64 (left) (showing portion of Morgan Fig. 13 annotated for 16[B]) and from Pet. at 60 (right) (showing portion of Morgan Fig. 13 annotated for 16[A])

This alternative mapping of Morgan conflicts with 16[A], because the Petition does not set forth any basis for alleging that socket 214 alone is a package body that encapsulates "a plurality of light emitting diodes and four electric conductivity supports," as required by 16[A]. *See* Pet. at 63-64. The alternative mapping also fails because the Petition does not establish, or even allege, that optic 218 is a lampshade ***covering*** socket 214, because 16[B] requires "a lampshade covering the package body."

For these reasons, Ground 3 in the Petition does not establish unpatentability of independent claim 16.

D. Ground 3 Fails to Show That Morgan Meets 21[D]

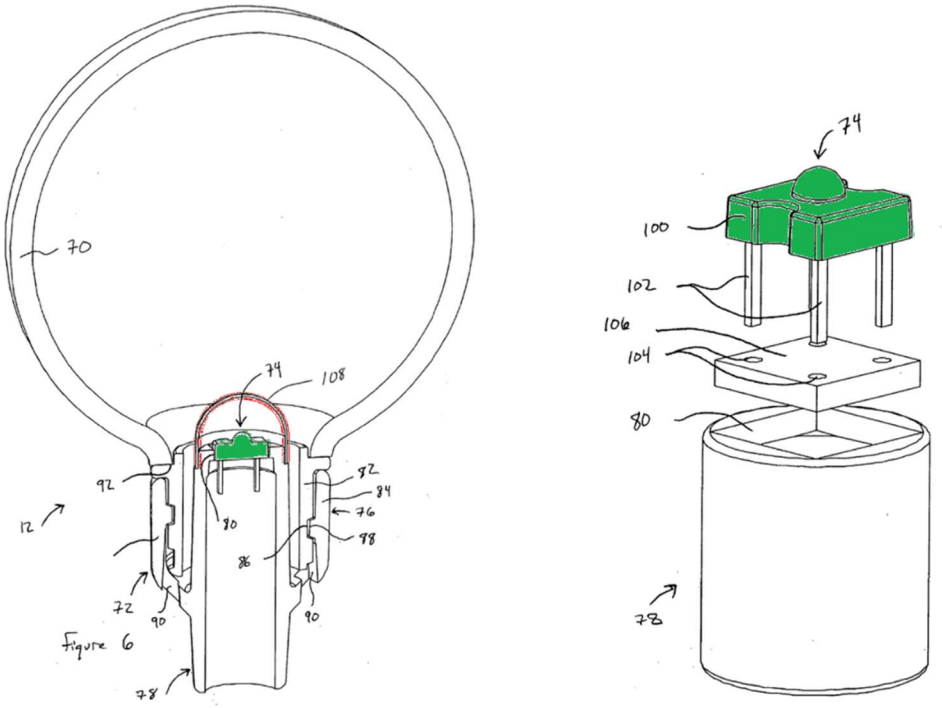
The Petition fails to establish unpatentability of independent claim 21 based on Morgan for the same reasons as discussed with respect to 16[B]. 21[D] recites "a lampshade covering the package body of the light emitting diode lamp," similar to 16[B]. *See* Ex. 1001 at 10:25-26, 9:53-54. "Package body" in 21[D] finds antecedent basis in 21[A] and 21[B], which together recite "a light emitting diode lamp having a package body and a circuit board, the package body encapsulating a plurality of light emitting diodes and four electric conductivity supports, the four electric conductivity supports being electrically connected to the circuit board," similar to 16[A]. *See id.*, 10:16-20, 9:50-52.

The Petition sets forth the same obviousness analysis and mappings to Morgan for 21[D] as for 16[B]. *See* Pet. at 78-79, 63-64. As explained in Section V.C. above, Ground 3 of the Petition fails to establish unpatentability of 16[B]. For the same reasons, Ground 3 fails to establish unpatentability of 21[D].

E. Ground 5 Fails to Show That Allsop in View of the General Knowledge of a POSITA Meets "A Plurality of Light Emitting Diodes" in 16[A]

16[A] recites "a light emitting diode lamp having ***a plurality of light emitting diodes.***" Ex. 1001, 9:50-52 (emphasis added). The Petition fails to establish that Allsop alone or in combination with the knowledge of a POSITA renders 16[A] obvious.

The Petition incorrectly alleges that Allsop discloses "a plurality of light emitting diodes." Pet. at 88-89. The Petition cites only paragraph [0040] of Allsop, which discloses a ***single*** lighting element 74 having a ***single*** LED under a light element shield 108. Allsop at [0040] ("***a*** lighting element 74 embodied as an LED circuit board 100 having an LED mounted thereon," "wavelengths other than those output by ***the*** LED") (emphases added), *see also id.*, Figs. 6 and 7 (illustrating a single lighting element 74):



Allsop (Ex. 1008) Fig. 6 (left) and Fig. 7 (right) (annotated highlighting ***shield 108*** *in* ***red*** *and* ***lighting element 74*** *in* ***green****)*

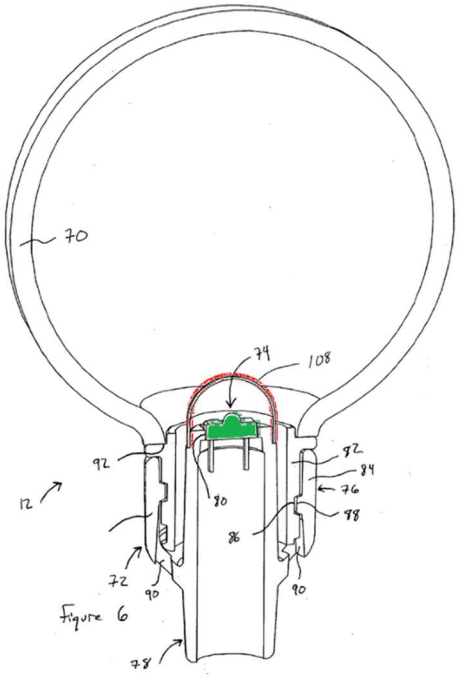
As shown in Figures 6 and 7, and described in paragraph [0040], Allsop discloses a single lighting element 74 with a single LED. Petitioner is wrong to allege otherwise.

Petitioner assumes that Allsop's circuit board 100 must include multiple LEDs in order to output "amber, or any other color." *See* Pet. at 88 (citing Allsop at [0040]). The very same paragraph Petitioner cites to refutes this assumption: Allsop teaches using a phosphorescent coating over an LED to produce "light having wavelengths other than those output by the LED." Allsop at [0040]. Therefore, not only does Allsop lack a plurality of light emitting diodes, but Allsop also teaches a POSITA

how to output "any other color" without needing more than a single LED. *Id.* The Petition therefore fails to establish that Allsop discloses 16[A].

Apparently acknowledging Allsop's single LED, the Petition also argues that it would have been an "obvious and simple modification to explicitly include two separate LEDs in Allsop's lighting element assembly." Pet. at 89. This argument is wrong. Petitioner mentions a desire "to create any color" as a basis for modifying Allsop to include multiple LEDs, *id.*, but this is a strawman argument. Allsop teaches how to output "amber or any other color" using a single LED and a phosphorescent coating, as explained above. *See* Allsop at [0040]. Therefore, Petitioner does not require any actual deficiency warranting modification to have a plurality of LEDs in Allsop.

Furthermore, the Petition does not explain how – or even allege that – a POSITA would have expected success in adding LEDs to Allsop's device. Fig. 6 of Allsop suggests that a POSITA would not have been able to add a plurality of LEDs without extensive modification:



*Allsop (Ex. 1008) Fig. 6 (annotated highlighting **lighting element shield 108** in **red** and **lighting element 74** in **green**)*

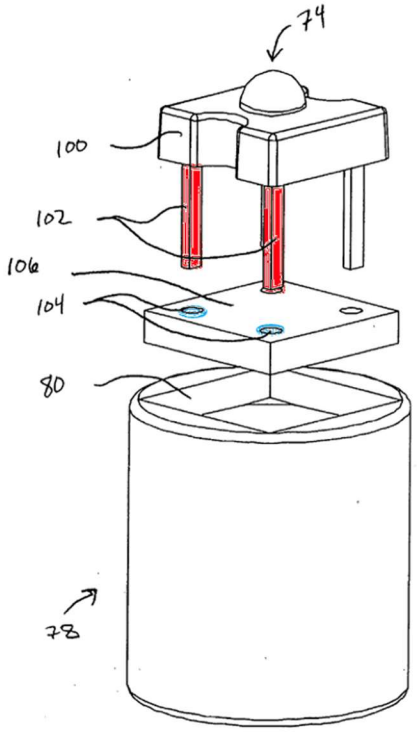
As shown above, **lighting element shield 108** fits around **lighting element 74** and is in close proximity to the **lighting element 74**. In the figure above, there is no room within shield 108 to add any more lighting elements. Petitioner and Dr. Schubert do not address the engineering challenges in modifying Allsop's device given these space constraints, because the Petition does not even allege a reasonable expectation of success in modifying Allsop. For these reasons, the Petition fails to establish that 16[A] would have been obvious over Allsop in view of the general knowledge of a POSITA.

F. Ground 5 Fails to Show That Allsop Meets "Four Electric Conductivity Supports" in 16[A]

16[A] also recites "a light emitting diode lamp having . . . ***four electric conductivity supports*** encapsulated in a package body." Ex. 1001, 9:50-52 (emphasis added). The Petition alleges, but does not establish, that Allsop discloses four conductivity supports.

In addressing this claim limitation, the Petition cites only to Allsop Fig. 7 and paragraph [0040], and paragraph 174 of Dr. Schubert's declaration that repeats the Petition verbatim. Pet. at 89-90. The Petition alleges that "[f]our conductivity supports are illustrated in FIG. 7" of Allsop. *Id*., 89. This is incorrect.

Allsop discloses a circuit board 100 with leads 102 extending therefrom. Leads 102 extend through apertures 104 formed in an LED mount plate 106. Leads 102 are connected to a wire 50. Allsop at [0040]. Fig. 7 of Allsop, which corresponds to paragraph [0040], illustrates circuit board 100, leads 102, apertures 104, and LED mount plate 106:



*Allsop (Ex. 1008), Fig. 7 (annotated showing **leads 102** in **red** and **apertures 104** in **blue**)*

As shown above, Fig. 7 labels only two **leads 102**. Likewise, Fig. 7 labels only two **apertures 104**. Fig. 7 and paragraph [0040] of Allsop do not disclose four leads 102. Once again, Petitioner and its expert assume that the claim limitation is met, without the factual support necessary for institution. *See Upjohn Co.*, 225 F.3d at 1311. Dr. Schubert provides no additional explanation as to why Allsop must disclose four electric conductivity supports, when Fig. 7 only labels two leads 102, and paragraph [0040] of Allsop is silent as to the number of leads 102. *See Samsung Electronics Co.*, IPR2023-01102, Paper 11 at 13 (denying institution and affording little weight

to expert testimony that is based upon assumptions). For example, the Petition and Dr. Schubert fail to explain why Allsop necessarily discloses four electric conductivity supports, as opposed to two electrical leads 102, and two non-electric and non-conductive posts used only for mounting the circuit board 100 to the LED mount plate 106. Indeed, there is nothing in the Petition establishing that Allsop's circuit board 100 requires any more than two leads 102 – one for positive power and one for negative power or ground.

At bottom, Allsop does not expressly disclose "four electric conductivity supports encapsulated in a package body" as claimed, and the Petition fails to establish that Allsop must have four leads 102. For these reasons, the Petition fails to establish that independent claim 16 is unpatentable over Allsop.

G. Grounds 2, 4, 6, and 7 Fail Because Grounds 1, 3, and 5 Fail

Grounds 2, 4, 6, and 7 address claims that depend from independent claims 1, 16, or 21, addressed in Grounds 1, 3, and 5. As established above, Petitioner has failed to establish that any of independent claims 1, 16, and 21 are unpatentable in Grounds 1, 3, or 5. The Petition thus also fails to establish a reasonable likelihood of prevailing on any of Grounds 2, 4, 6, or 7.

VI. CONCLUSION

For at least the reasons provided above, the Petition should be denied.

Respectfully submitted,

Dated: February 22, 2024 By: /Ming-Tao Yang/
Ming-Tao Yang, Reg. No. 62,019
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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** contains 8,473 words, excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: February 22, 2024

/Ming-Tao Yang/
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Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served on February 22, 2024, via e-mail directed to counsel of record for the Petitioner at the following:

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