

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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IKEA SUPPLY AG,  
Petitioner,

v.

EVERLIGHT ELECTRONICS CO., LTD.,  
Patent Owner.

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IPR2024-00972  
Patent 9,640,733 B2

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Before NABEEL U. KHAN, ARTHUR M. PESLAK, and  
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

KHAN, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314

## I. INTRODUCTION

### A. *Background and Summary*

IKEA Supply AG (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–5 and 7 (“the challenged claims”) of U.S. Patent No. 9,640,733 B2 (“the ’733 patent,” Ex. 1001). Everlight Electronics Co., Ltd. (“Patent Owner”) did not file a Preliminary Response.

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence presented by Petitioner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’733 patent and we institute an *inter partes* review as to all the challenged claims of the ’733 patent on all the grounds of unpatentability set forth in the Petition.

### B. *Related Proceedings*

The parties identify the following pending matters as involving the ’733 patent: *Everlight Electronics Co., Ltd. v. IKEA US Retail LLC, et al.*, No. 2:23-cv-00126-JRG (E.D. Tex.); *Everlight Electronics Co., Ltd. v. IKEA US Retail LLC*, No. 6:23-cv-00481-AM (W.D. Tex.) (“IKEA-Everlight Litigation”); and *Everlight Electronics Co., v. Walmart Inc.*, No. 6:23-cv-00439-AM-DTG (W.D. Tex.) (“Walmart-Everlight Litigation”). Pet. 2; Paper 4, 1–2.

### C. *The ’733 Patent (Ex. 1001)*

The ’733 patent, titled “Carrier, Carrier Leadframe, and Light Emitting Device,” relates to a “carrier leadframe for receiving a light

emitting diode (LED) chip and a light emitting device made from the leadframe.” Ex. 1001, code (54), 1:17–19. The ’733 patent explains that in dicing-type carrier leadframes, a plastic body is molded on a metal sheet, and then after a die bonding process, a wire bonding process, and an encapsulation process, the metal sheet material and the plastic body are diced away simultaneously to form individual light emitting devices that are separate from each other. Ex. 1001, 1:40–47. However, this process has its disadvantages. For example, a large amount of plastic and metal dust tends to be produced during the dicing process which can degrade the reliability of the products. *Id.* at 1:47–51. Additionally, this process does not allow for testing and measurements prior to the encapsulation process, and measurements made after the products are final require additional instruments and are time consuming. *Id.* at 1:51–58.

The invention of the ’733 patent, therefore, provides a carrier and a carrier leadframe that has at least one carrier that is separated in advance and mechanically engaged with the leadframe which, according to the ’733 patent, facilitates quick release of material after die bonding, wire bonding, and encapsulation. Ex. 1001, 2:4–9. Additionally, each carrier in the carrier leadframe described in the ’733 patent is electrically isolated from other carriers, so after LEDs are die bonded and wire bonded to the carriers, electric measurements can be performed before the release of material. *Id.* at 2:9–14.

Figure 1 of the ’733 patent, reproduced below with annotations by the Board, shows a partial schematic view of a carrier leadframe. Ex. 1001, 2:32–33.



In Figure 1 above, a carrier leadframe 100 comprises a carrier 110 and a frame body 120. Ex. 1001, 3:26–28. Carrier 110 comprises housing 111 and electrode portions 112. *Id.* at 3:28–29. The frame body 120 comprises a plurality of supporting portions 121, runner area 122, and side portions 123. *Id.* at 3:29–30, 43–45. Each of the electrode portions may be formed with pinholes 141, grooves 143 (linear slits on the surface of the electrode portions), and steps 142. *Id.* at 3:49–60. Electrode portion 112 has a wing portion 112A exposed outside the housing and the wing portion 112A comprises a central protruding area 112A1 and two outer edge areas 112A2. *Id.* at 6:40–44.

The '733 patent explains that “when the electrode portion cross section and the housing cross section are located on the same surface of the carrier, the electrode portion cross section and the housing cross section may be level with each other (i.e. form a flat surface) or may not be level with each other (i.e., do not form a flat surface).” *Id.* at 6:34–39. In Figure 1,

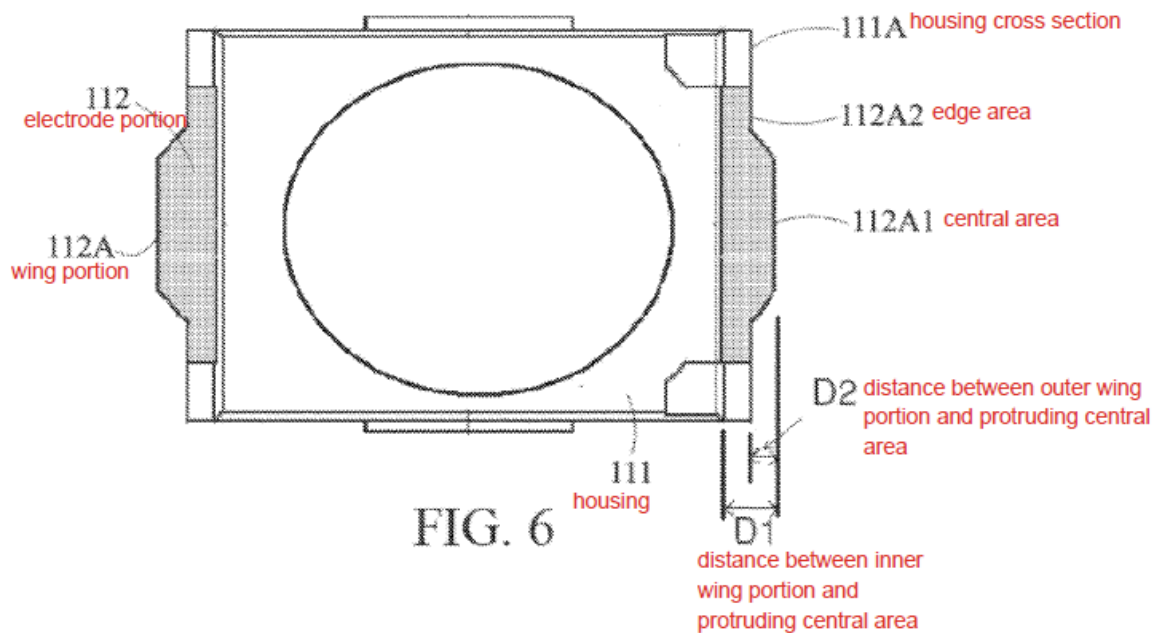
Figure 5, reproduced below with annotations, shows another embodiment of the carrier leadframe of the '733 patent. Ex. 1001, 2:41–42.



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The light emitting device of the '733 patent comprises a carrier, an LED chip, and an encapsulant. The encapsulant may be a plastic composite of epoxy resins or silicone, and the encapsulant may have fluorescent material added to it. Ex. 1001, 7:13–30.

Figure 6, reproduced below with annotations by the Board, is a top view of an embodiment of a light emitting device of the '733 patent.



In Figure 6, depicted above with annotations, wing portion 112A has a central area 112A1 and two edge areas 112A2. Ex. 1001, 7:53–55. The central area 112A1 protrudes from the two edge areas 112A2 and protrudes out of the housing cross section 111A so that the central area 112A1 is not coplanar with the housing cross section. *Id.* at 7:55–60. Interval D1 is the distance between the central area 112A1 and the inner side of the housing cross section 111A, and is about 0.1 mm. *Id.* at 7:60–64. An interval D2 is the distance between the central area 112A1 and the outer side of the wing portion 112A, and is about 0.05 mm. *Id.* at 7:64–8:3. The '733 patent

discloses other variations with differing distance intervals. *See id.* at Figs. 7–8.

#### *D. Illustrative Claim*

Claim 1 is the only independent claim of the '733 patent and is reproduced below.

A light emitting device, comprising: a carrier; a light emitting diode (LED) chip carried within the carrier; and an encapsulant covering the LED chip, wherein the carrier comprises: at least one electrode portion, each of the at least one electrode portion comprising at least an electrode portion cross section; and a housing comprising a housing cross section, the housing at least partially covering the at least one electrode portion, wherein the housing cross section and the electrode portion cross section are not level with one another; wherein each of the at least one electrode portion further comprises a central area and two edge areas, and wherein the electrode portion cross section is located on at least one of the two edge areas; wherein the central area and the two edge areas protrude from the housing cross section wherein the central area protrudes from the two edge areas.

Ex. 1001, 14:6–20.

#### *E. Evidence*

The Petition relies on the following references:

| <b>Reference</b>                                                                         | <b>Exhibit No.</b> |
|------------------------------------------------------------------------------------------|--------------------|
| US Patent No. 7,771,093 B2; filed Aug. 6, 2007; issued Aug. 10, 2010 (“Kishikawa”).      | 1004               |
| US Patent No. 7,462,870 B2; filed Mar. 23, 2006; issued Dec. 9, 2008 (“Nakashima”).      | 1005               |
| Japanese Patent Publication No. 2014-41966; filed Aug. 23, 2012; published Mar. 6, 2014. | 1006               |
| Certified English Translation of Japanese Patent Publication No. 2014-41966 (“Umeda”).   | 1007               |
| US 2014/0124812 A1; filed Jan. 15, 2014, published May 8, 2014 (“Kuramoto”).             | 1008               |

| Reference                                                                       | Exhibit No. |
|---------------------------------------------------------------------------------|-------------|
| US Patent No. 7,719,024 B2; filed Dec. 27, 2006; issued May 18, 2010 (“Bando”). | 1009        |

Petitioner also relies on the Declaration of Dr. Michael S. Lebby (Ex. 1003) in support of its arguments.

*F. Asserted Grounds of Unpatentability*

Petitioner assert that claims 1–5 and 7 would have been unpatentable on the following grounds<sup>1</sup>:

| Ground | Claim(s)<br>Challenged | 35 U.S.C.<br>§ <sup>2</sup> | Reference(s)/Basis        |
|--------|------------------------|-----------------------------|---------------------------|
| 1      | 1–5                    | 102                         | Kishikawa                 |
| 2      | 1–5                    | 102                         | Nakashima                 |
| 3      | 1–5, 7                 | 103                         | Umeda, Bando <sup>3</sup> |
| 4      | 1–5, 7                 | 102                         | Kuramoto                  |
| 5      | 7                      | 103                         | Kishikawa, Bando          |
| 6      | 7                      | 103                         | Nakashima, Bando          |
| 7      | 7                      | 103                         | Kuramoto, Bando           |

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<sup>1</sup> Petitioner identifies certain grounds as based on multiple different combinations of prior art. For example, Petitioner identifies its ground 5 as based on “each of Grounds 1, 2, or 4 in view of Bando and/or the [ordinary level of skill in the art] OLSA.” Pet. 5. This ground 5 contains in it three separate grounds. We have separated this combined challenge into its constituent grounds in the table above.

<sup>2</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103 and became effective March 16, 2013. Because the ’733 patent was filed after this date, the AIA versions of §§ 102 and 103 apply.

<sup>3</sup> Petitioner adds the level of ordinary skill in the art as a basis for certain grounds. Pet. 5. We note that “the knowledge of such an artisan is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013). Accordingly, we consider the knowledge of a POSITA as part of our obviousness analysis.

| Ground | Claim(s)<br>Challenged | 35 U.S.C.<br>§ <sup>2</sup> | Reference(s)/Basis |
|--------|------------------------|-----------------------------|--------------------|
| 8      | 1–5                    | 103                         | Kishikawa          |
| 9      | 1–5                    | 103                         | Nakashima          |
| 10     | 1–5                    | 103                         | Kuramoto           |

## II. ANALYSIS

### A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

To “demonstrate anticipation, the proponent must show ‘that the four corners of a single, prior art document describe every element of the claimed invention.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Xerox Corp. v. 3Com Corp.*, 458 F.3d 1310, 1322 (Fed. Cir. 2006)). The prior art document “must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Id.* (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). Hence, a patent challenger cannot rely on portions from different, unrelated embodiments in a prior art document to demonstrate anticipation. *See id.* at 1369, 1371.

A patent claim is unpatentable under 35 U.S.C. § 103 “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103; *see KSR Int’l*

*Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including:

(1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) any objective evidence of obviousness or non-obviousness.<sup>4</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*B. Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks and citation omitted).

Petitioner contends that a person of ordinary skill in the art (POSITA) “would have (1) a Bachelor’s degree in electrical engineering, physics, or a comparable field of study, and (2) at least three years of professional experience with semiconductor optoelectronic devices and packaging.” Pet. 19. Petitioner notes that its proposed level of skill is approximate and that a higher level of education or skill might make up for less experience and additional experience might make up for lower education level. *Id.*

Patent Owner did not file a Preliminary Response and has not proposed a level of skill in the art.

For purposes of this Decision, we adopt Petitioner’s proposed level of ordinary skill, except that we find that the phrase “at least” in Petitioner’s

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<sup>4</sup> Neither party has introduced any objective evidence of nonobviousness.

proposed definition creates a vague, open-ended upper bound for the level of ordinary skill, and we therefore do not adopt that aspect of the proposal.

### C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b).

In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Only claim terms in controversy require express construction, “and only to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *see also Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

Petitioner notes that a claim construction order was issued in the Walmart-Everlight Litigation. Pet. 42 (citing Ex. 1016). Petitioner states that it is applying the construction for “electrode portion cross section” and “housing cross section” from the Walmart-Everlight Litigation in this proceeding and has, therefore, identified in its comparison of the challenged

claims with the prior art a “plane surface formed by cutting a solid” for each of the recited cross sections. *Id.*

Petitioner contends that no other constructions are needed for purposes of this proceeding but notes that the phrase “the housing cross section and the electrode portion cross section are not level with one another” was found indefinite in the Walmart-Everlight Litigation. Pet. 42 (citing Ex. 1016, 3). Petitioner argues that even though the district court found the claim phrase indefinite, the prior art “falls within the scope of any meaning that can be ascribed to the claims because the art is identical to the structural embodiments disclosed and claimed in the ’733 patent.” *Id.* at 42–43. Petitioner, therefore, for purposes of this proceeding, applies the plain meaning for this term. *Id.* at 43.

Although the district court in the Walmart-Everlight Litigation determined that the “not level” limitation is “[i]ndefinite,” it did so without explanation. Ex. 1016, 3. The Specification of the ’733 patent, however, directly addresses this term, stating “when the electrode portion cross section and the housing cross section are located on the same surface of the carrier, the electrode portion cross section and the housing cross section may be level with each other (i.e., form a flat surface) or may not be level with each other (i.e., do not form a flat surface).” Ex. 1001, 6:34–39. This description appears consistent with the plain and ordinary meaning of the word “level” which is “having no part higher than another,” “even or unvarying in height,” or “to make (a line or surface) horizontal : make flat or level.” Merriam-Webster Dictionary (Ex. 3001).<sup>5</sup> Thus, based on the current

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<sup>5</sup> <https://www.merriam-webster.com/dictionary/level> (accessed Dec. 2, 2024).

record, we are able to ascertain the scope of claim 1 with reasonable certainty for purposes of assessing patentability. *Cf. Samsung Elecs. Am., Inc. v. Prisia Eng'g Corp.*, 948 F.3d 1342, 1353 (Fed. Cir. 2020) (“[T]he proper course for the Board to follow, if it cannot ascertain the scope of a claim with reasonable certainty for purposes of assessing patentability, is to decline to institute the [*inter partes* review] or, if the indefiniteness issue affects only certain claims, to conclude that it could not reach a decision on the merits with respect to whether petitioner had established the unpatentability of those claims under sections 102 or 103.”). Consequently, we determine that a person of ordinary skill would understand the “not level” limitation to mean that the housing cross section and the electrode portion cross section do not form a flat surface with one another.

At this stage of the proceeding, we do not see the need to expressly construe any other claim terms, as the threshold question of institution can be decided without doing so. *See Nidec*, 868 F.3d at 1017 (approving Board decision not to construe claim language where construction is not material to the dispute).

A final determination as to claim construction will be made at the close of the proceeding, after any hearing, based on all the evidence of record. The parties are expected to assert all their claim construction arguments and evidence in the Petition, Patent Owner’s Response, Petitioner’s Reply, Patent Owner’s Sur-Reply, or otherwise during trial, as permitted by our rules.

#### *D. Anticipation by Kishikawa (Ground 1)*

Petitioner argues that Kishikawa anticipates claims 1–5 of the ’733 patent. Pet. 43–62. Below we provide a brief overview of the prior art reference and then analyze Petitioner’s contentions.

*1. Kishikawa (Ex. 1004)*

Kishikawa is titled “Light Emitting Device,” and “relates to a light emitting device in which a light emitting element is mounted on a metal member, and parts of the light emitting element and the metal member are embedded in a package.” Ex. 1004, code (54), 1:6–10. Kishikawa describes a semiconductor device in which part of a lead frame is coated with a silicon resin layer, and a semiconductor element, which includes the silicon resin layer, is further covered with a sealing resin layer. *Id.* at 1:17–23. The semiconductor device is described as having a groove formed in a portion of the lead frame corresponding to the peripheral edge of the silicon resin layer for preventing outflow of the silicon resin. *Id.* at 1:23–27. Kishikawa explains that while the groove prevents resin out-flow, when resin flows into the groove, the resin may flow out from the ends of the groove and the shape of the silicon resin layer may not be sufficiently stabilized. *Id.* at 1:28–40. Kishikawa aims to prevent the out-flow of the translucent covering material and allows the translucent covering material to be reliably disposed in the proper location. *Id.* at 1:44–51. Kishikawa, therefore, provides a light emitting device comprising a first metal member, a light emitting element mounted at one end of the first metal member, and a translucent covering material that covers at least the light emitting element, wherein the first metal member has a depression that effectively dams and prevents the out-flow of the translucent covering material and prevents it from running down from the metal member. *Id.* at 1:61–67.

Figure 2a of Kishikawa, reproduced below, depicts a plan view of the light emitting device.

Fig.2a

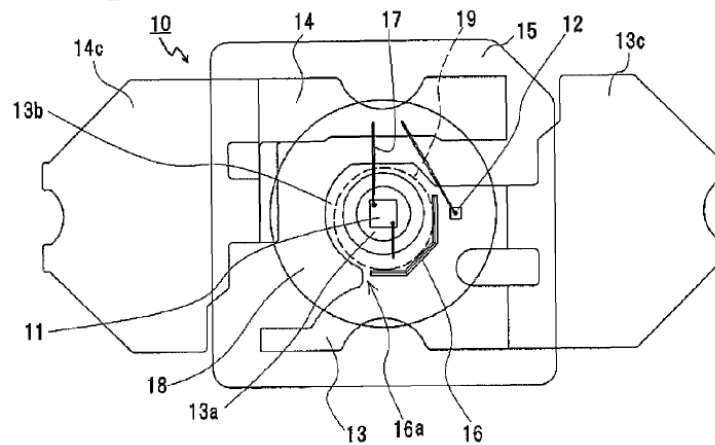


Figure 2a depicts a snap mounting-type light emitting device, in which a light emitting element 11, a protective element 12, and parts of a first metal member 13 and a second metal member 14 are integrally sealed in a package 15 made of an epoxy resin. Ex. 1004, 9:14–19. The first and second metal members 13 and 14 are bent at approximately 90° within the package so that their ends protrude from the bottom face of the package 15, and are then further bent approximately 90° to the outside of the light emitting device, so that they function as external terminals. *Id.* at 9:36–41. The first metal member 13 is equipped with a concave portion 13a and a plane face 13b. *Id.* at 9:47–48. The concave portion 13a has a diameter of about 1.2 mm, and the width of the plane face 13b is about 0.8 mm at the portion facing the second metal member 14. *Id.* at 9:48–52. A depression 16 is formed in the plane face 13b. *Id.* at 9:52–53. A translucent covering material 19 made of a silicon resin containing a fluorescent substance and a diffuser is embedded by potting from the concave portion 13a to part of the plane face 13b of the first metal member 13. *Id.* at 9:57–61. Lens 18, which is above the concave portion 13a, converges the light from the light emitting element 11. *Id.* at 9:65–67.

## 2. *Analysis of Claim 1*

Petitioner contends that Kishikawa anticipates claim 1. Pet. 44–58. Petitioner supports its arguments with citations to Kishikawa and to the testimony of Dr. Lebbby. Patent Owner did not file a Preliminary Response. Below we analyze Petitioner’s arguments regarding the elements of claim 1 as identified in the Petition. At this stage of the proceeding, we determine Petitioner has sufficiently shown that Kishikawa discloses the elements of claim 1 arranged as in the claim.

### *a) Preamble*

Petitioner contends Kishikawa discloses a light emitting device as recited in the preamble of claim 1. Pet. 44 (citing Ex. 1004, code (54), 2:13–16, 9:14–15, Figs. 1, 2a, 2b).

At this stage of the proceeding, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses the preamble of claim 1.<sup>6</sup> Kishikawa is titled “Light Emitting Device” and its disclosure relates to “a light emitting device in which a light emitting element is mounted on a metal member, and parts of the light emitting element and the metal member are embedded in a package.” Ex. 1004, 1:6–10.

### *b) “a carrier . . . comprises at least one electrode portion . . . and a housing”*

Petitioner contends Kishikawa discloses a carrier that comprises “at least one electrode portion” and a “housing.” Pet. 44 (citing Ex. 1004, 9:14–19, 9:65–67, Figs. 2a, 2b). Petitioner contends that Kishikawa does not explicitly use the term “carrier” but that, consistent with the ’733 patent’s

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<sup>6</sup> Because we determine Petitioner has shown sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble, the issue of whether the preamble is limiting need not be resolved at this stage.

description of a carrier consisting of a housing and an electrode portion, Kishikawa's package 15 and metal portions 13 and 14 correspond to the recited "carrier." Pet. 45–47 (citing Ex. 1004, 9:14–19, Figs. 2a, 2b; Ex. 1001, 3:28–29, 8:51–60, Fig. 1). Petitioner contends that, as depicted in Figures 2a and 2b of Kishikawa, package 15 corresponds to the recited "housing" and metal members 13 and 14 correspond to the recited "at least one electrode portion." *Id.* (citing Ex. 1004, 9:14–19, Figs. 2a, 2b).

At this stage of the proceeding, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1. As Petitioner contends, Kishikawa discloses that its light emitting device includes "a light emitting element 11, a protective element 12, and parts of a first metal member 13 and a second metal member 14" that are "integrally sealed in a package 15 made of epoxy resin." Ex. 1004, 9:15–19. Kishikawa further discloses that its metal member is "embedded in the package, [and] functions as a lead electrode and a platform for mounting the light emitting element." *Id.* at 3:20–23. These portions of Kishikawa sufficiently support Petitioner's contention that Kishikawa discloses a carrier comprising package 15 ("housing") and first and second metal members ("electrode portion").

*c) "light emitting diode (LED) chip carried within the carrier"*

Petitioner argues that Kishikawa discloses an LED chip carried within the carrier. Pet. 48. Specifically, Petitioner identifies Kishikawa's light emitting element 11 as an LED chip carried within a carrier. Pet. 48 (citing Ex. 1004, 2:33–41, 9:30–34, 3:48–51, 9:65–67, Fig. 2a; Ex. 1003 § 9.1.1.3).

At this stage of the proceeding, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1. Figure 2a of Kishikawa, which depicts light emitting element 11

within the light emitting device, supports Petitioner's contention that Kishikawa's light emitting element is carried within the carrier.

*d) "an encapsulant covering the LED chip"*

Petitioner argues that Kishikawa discloses an encapsulant covering the LED chip. Pet. 48 (citing Ex. 1004, 1:54–56, 7:6–17; Ex. 1003 ¶ 9.1.1.4). Specifically, Petitioner identifies Kishikawa's "translucent covering material" as corresponding to the recited "encapsulant covering the LED chip." *Id.*

At this stage of the proceeding, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1. Kishikawa discloses that "[t]he translucent covering material is embedded in the concave portion of the first metal member after the light emitting element has been placed in the concave portion of the first metal member." Ex. 1004, 7:6–9. Kishikawa further explains that "[t]he translucent covering material protects the light emitting element against external force, moisture, and so forth, and also protects the wiring." *Id.* at 7:14–17. These disclosures, which describe a translucent covering material covering and protecting a light emitting element, sufficiently support Petitioner's arguments.

*e) "the carrier comprises: at least one electrode portion"*

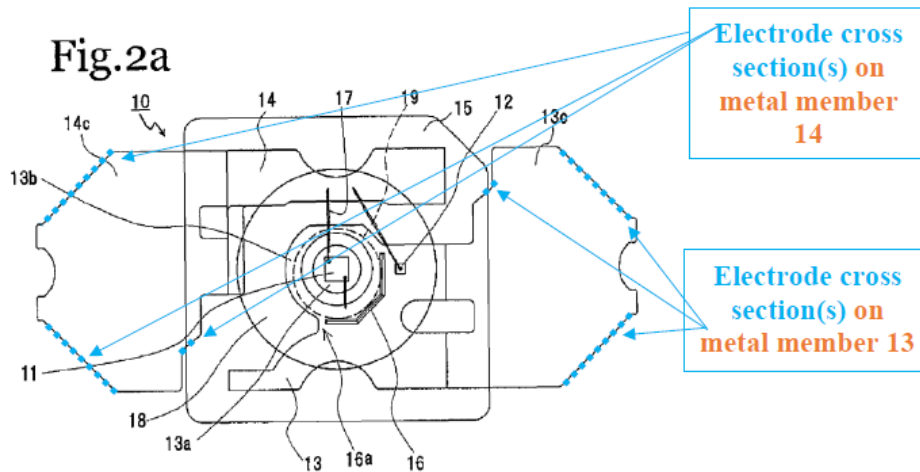
Petitioner contends that Kishikawa's carrier comprises "at least one electrode portion," identifying Kishikawa's disclosure of metal members 13 and 14. Pet. 49 (citing Ex. 1003 § 9.1.1.5).

At this stage of the proceeding, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1. For example, Kishikawa supports Petitioner's contentions by disclosing that its "metal member is usually embedded in the package" and

that part of the metal member “functions as a lead electrode.” Ex. 1004, 3:20–22.

- f) “each of the at least one electrode portion comprising at least an electrode portion cross section”*

Petitioner contends that although Kishikawa does not explicitly use the term “cross section,” the structural arrangement of Kishikawa is the same as that claimed in the ’733 patent. Pet. 50. Specifically, Petitioner identifies the edges of Kishikawa’s metal members 13 and 14 as the recited “electrode portion cross section” as illustrated below in an annotated version of Figure 2a of Kishikawa.



**Kishikawa FIG. 2a (Annotated)**

Petitioner’s annotated Figure 2a of Kishikawa, reproduced above, illustrates a plan view of an embodiment of Kishikawa’s light emitting device, identifying the edges of metal members 13 and 14 as the recited “electrode portion cross section.” Pet. 50 (citing Ex. 1004, Fig. 2a). Petitioner argues that its contentions are consistent with the electrode portion cross sections described in the ’733 patent and also consistent with Patent Owner’s infringement contentions in the IKEA-Everlight Litigation, in that

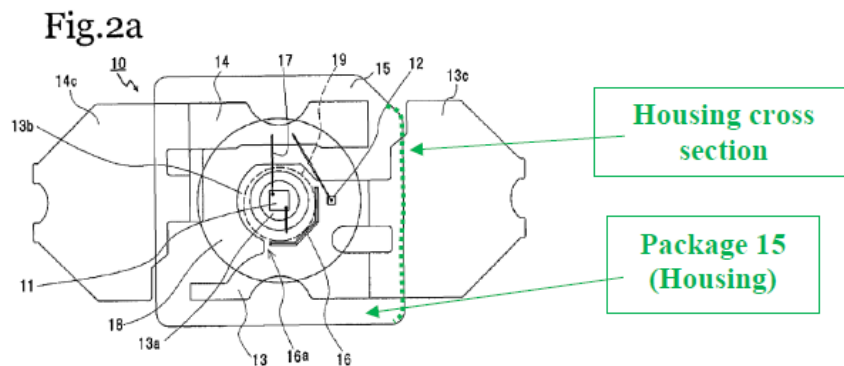
the identified cross sections are a plane surface formed by cutting a solid.

*Id.* (citing Ex. 1001, Fig. 5; Ex. 1010, 5).

At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

g) *“the carrier comprises . . . a housing comprising a housing cross section”*

Petitioner contends that Kishikawa discloses a housing comprising a housing cross section. Pet. 52 (citing Ex. 1003 § 9.1.1.7). Specifically, Petitioner identifies the edges of package 15 as the recited “housing cross section” and argues that these edges are a “plane surface formed by cutting a solid.” *Id.* (citing Ex. 1004, 8:13–17, Fig. 2a). Figure 2a of Kishikawa, as annotated by Petitioner, is reproduced below.



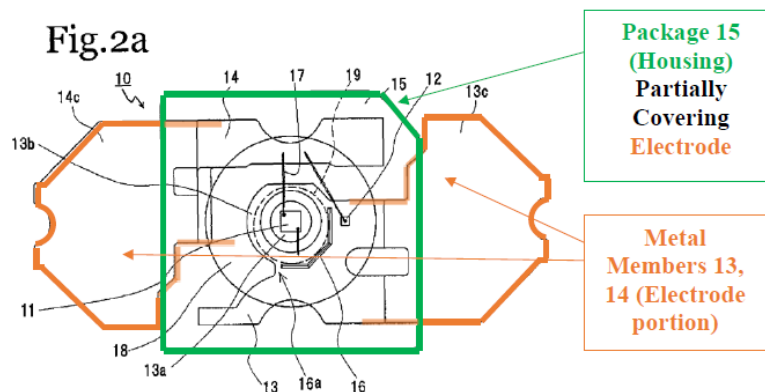
**Kishikawa FIG. 2a (Annotated)**

Figure 2a, as annotated by Petitioner and reproduced above, depicts Kishikawa’s light emitting device which includes package 15, the edge of which is identified by Petitioner as the recited “housing cross section.” Pet. 52.

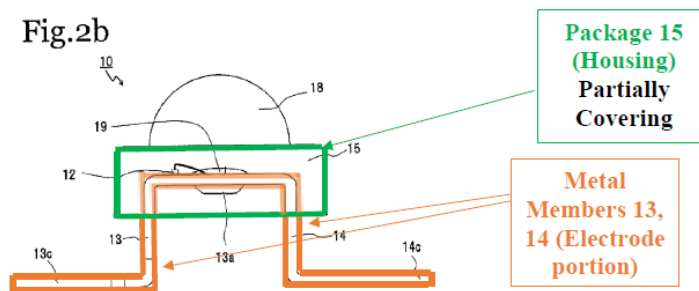
At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

*h) “the housing at least partially covering the at least one electrode portion”*

Petitioner argues that Kishikawa discloses that its housing at least partially covers the at least one electrode portion. Pet. 52–53 (citing Ex. 1003 § 9.1.1.8). According to Petitioner, package 15, which Petitioner identifies as the housing, partially covers metal members 13 and 14, which Petitioner identifies as the electrode portion. Pet. 53 (citing Ex. 1004, 8:13–17, Fig. 2a). Reproduced below are Kishikawa’s Figures 2a and 2b as annotated by Petitioner.



Kishikawa FIG. 2a (Annotated)



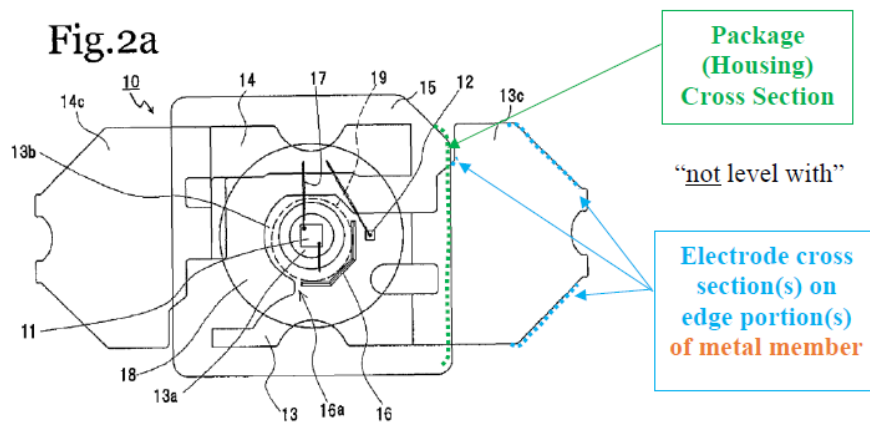
Kishikawa FIG. 2b (Annotated)

Petitioner's annotated Figures 2a and 2b of Kishikawa, reproduced above, illustrate the plan and side view, respectively, of an embodiment of the light emitting device showing how Kishikawa's package 15 partially covers its metal members 13 and 14.

At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

- i) *“wherein the housing cross section and the electrode portion cross section are not level with one another”*

Petitioner argues that Figure 2a of Kishikawa shows that the housing cross section on the edge of package 15 and an electrode portion cross section on outer edges of metal members 13 and 14 are not level with one another and would intersect with each other. Pet. 54 (citing Ex. 1003 § 9.1.1.9; Ex. 1004, Fig. 2a). Figure 2a of the Kishikawa, as annotated by Petitioner, is reproduced below.



Kishikawa FIG. 2a (Annotated)

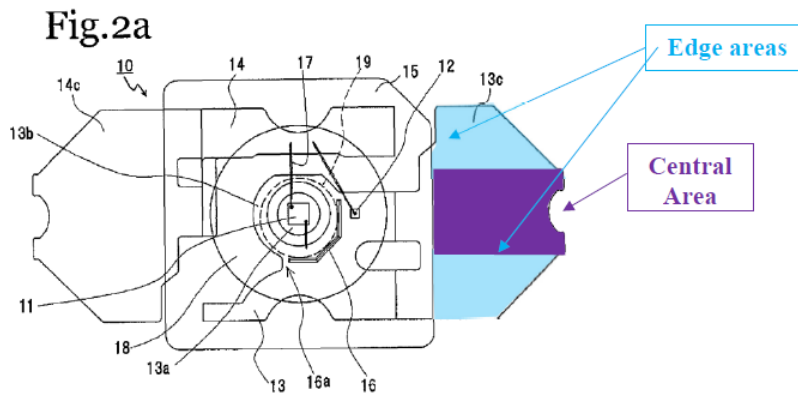
Figure 2a of Kishikawa, as annotated by Petitioner, shows the edge of package 15 and the edge portions of metal members 13 and 14 with a label provided by Petitioner stating that the two are “not level with” each other.

At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1. Figure 2a and Figure 2b of Kishikawa show that the edge of package 15 (housing cross section) and the edge of the metal members 13 and 14 (electrode portion cross sections) are not aligned in the horizontal direction and therefore do not form a flat surface with one another.

As the trial proceeds, the parties may wish to address the construction and analysis of this limitation further, including the findings and determination presented here, consistent with our rules.

j) *“each of the at least one electrode portion further comprises a central area and two edge areas”*

Petitioner contends that Figure 2a of Kishikawa shows that metal members 13 and 14 comprise a central area and two edge areas. Pet. 55 (citing Ex. 1003 § 9.1.1.10). Figure 2a, as annotated by Petitioner, is reproduced below.



Kishikawa FIG. 2a (Annotated)

Figure 2a, as annotated by Petitioner, depicts metal member 13 having a central area and two edge areas. At this stage of the proceeding, based on

the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

*k) “wherein the electrode portion cross section is located on at least one of the two edge areas”*

Petitioner contends that Figure 2a of Kishikawa shows that the electrode portion cross sections are located on at least one of the two edge areas of metal members 13 and 14. Pet. 55 (citing Ex. 1001, Fig. 2a; Ex. 1003 § 9.1.1.11).

Having reviewed Petitioner’s contentions showing the location of the electrode portion cross sections and the edge areas, at this stage of the proceeding we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

*l) “wherein the central area and the two edge areas protrude from the housing cross section”*

Petitioner contends that Figure 2a of Kishikawa shows the central area and two edge areas protruding from the housing cross section. Pet. 56 (citing Ex. 1001, Fig. 2a; Ex. 1003 § 9.1.1.12).

Having reviewed Petitioner’s contentions showing the central area, two edge areas, and the location of the housing cross section in the figures reproduced above, at this stage of the proceeding we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

*m) “wherein the central area protrudes from the two edge areas”*

Petitioner contends that Figure 2a of Kishikawa shows the central area of metal members protruding from the two edge areas of those metal members. Pet. 57 (citing Ex. 1001, Fig. 2a; Ex. 1003 § 9.1.1.13).

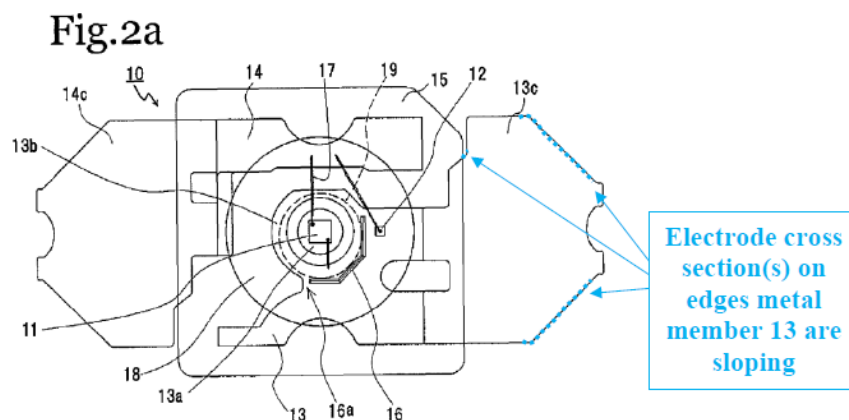
Having reviewed Petitioner's contentions showing the central area, and two edge areas in the figures reproduced above, where the central area protrudes further from package 15 than the edge areas, at this stage of the proceeding we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 1.

*n) Conclusion – Claim 1*

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 1 is anticipated by Kishikawa.

*3. Dependent Claim 2*

Dependent claim 2 recites “wherein the electrode portion cross section comprises a sloping surface.” Ex. 1001, 14:21–22. Petitioner contends that “[n]umerous cross sections on edge portions of Kishikawa's metal members 13, 14 have the claimed ‘sloping surfaces.’” Pet. 59 (citing Ex. 1001, Figs. 2a, 9). Figure 2a of Kishikawa, as annotated by Petitioner, is reproduced below.



**Kishikawa FIG. 2a (Annotated)**

In Figure 2a of Kishikawa, as annotated above, Petitioner depicts a plan view of Kishikawa's light emitting device and notes that the electrode cross sections of metal member 13 are sloping. Pet. 59.

At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 2.

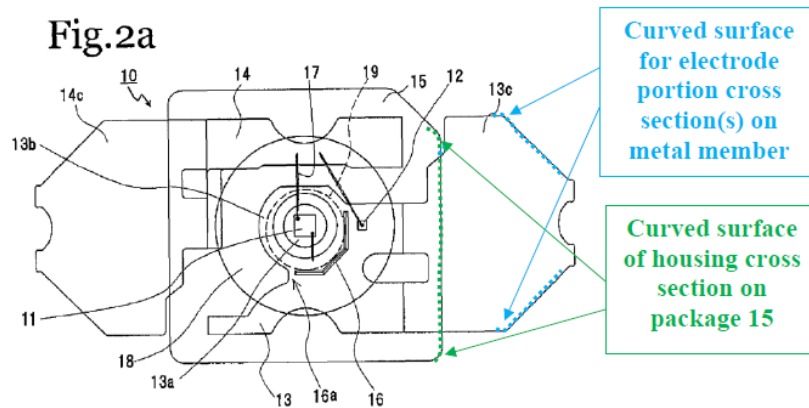
4. *Dependent Claim 3*

Dependent claim 3 recites “wherein the electrode portion cross section and the central area are not coplanar.” Ex. 1001, 14:23–25. Petitioner contends “[t]he central portion of Kishikawa’s metal member 13 (electrode) is irregularly shaped and not co-planar with the sloped electrode cross sections on the edge portions.” Pet. 60 (citing Ex. 1003 § 9.1.3).

We agree with Petitioner on this record that, as depicted in Figure 2a, the electrode portion cross section and the central area of metal members 13 and 14 are not coplanar. At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 3.

5. *Dependent Claim 4*

Dependent claim 4 recites “wherein the housing cross section or the electrode portion cross section comprises a curved surface.” Ex. 1001, 14:26–28. Petitioner contends “each of the housing cross section on package 15 and the electrode cross section on metal member 13 comprises a curved surface.” Pet. 60. Figure 2a of Kishikawa, as annotated by Petitioner, is reproduced below.



Kishikawa FIG. 2a (Annotated)

Figure 2a, as annotated by Petitioner, shows curved portions of both the electrode cross section and housing cross section at their corners and sufficiently supports Petitioner’s contentions. Pet. 61.

At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 4.

#### 6. *Dependent Claim 5*

Dependent claim 5 recites “wherein the housing cross section comprises a rounded corner.” Ex. 1001, 14:29–30. Petitioner contends “[p]ackage 15 (housing) is shown to have a rounded corner in FIG. 2a, and thus the housing cross-section, which is located on the edges of the package 15 housing, includes a rounded corner.” Pet. 61 (citing Ex. 1003 § 9.1.5).

Reviewing Figure 2a of Kishikawa, reproduced above with respect to claim 4, we agree that the housing cross section has a rounded corner. At this stage of the proceeding, based on the contentions and supporting evidence provided by Petitioner as summarized above, we determine Petitioner has established a reasonable likelihood that Kishikawa discloses this limitation of claim 5.

7. *Conclusion – Ground 1*

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claims 1–5 are anticipated by Kishikawa.

*E. Remaining Grounds 2–10*

Petitioner argues claims 1–5 of the '733 patent are anticipated by Nakashima (Ground 2), claims 1–5 and 7 would have been obvious over Umeda and Bando (Ground 3), claims 1–5 and 7 are anticipated by Kuramoto (Ground 4), claim 7 would have been obvious over Kishikawa and Bando (Ground 5), claim 7 would have been obvious over Nakashima and Bando (Ground 6), claim 7 would have been obvious over Kuramoto and Bando (Ground 7), claims 1–5 would have been obvious over Kishikawa (Ground 8), claims 1–5 would have been obvious over Nakashima (Ground 9), and claims 1–5 would have been obvious over Kuramoto (Ground 10). Pet. 62–113.

Because Petitioner demonstrates a reasonable likelihood of success in showing that at least one claim of the '733 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue these grounds. Those challenges, in our view, are best left for trial after full development of the record.

III. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of at least one challenged claim of the '733

patent and we institute on all grounds raised and all claims challenged in the Petition. At this stage of the proceeding, however, we have not made a final determination with respect to the patentability of the challenged claims.

#### IV. ORDER

For the foregoing reasons, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–5 and 7 of the '733 patent is instituted with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '733 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2024-00972

Patent 9,640,733 B2

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