

PUBLIC VERSION

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CURRENT LIGHTING SOLUTIONS, LLC d/b/a GE CURRENT,
Petitioner,

v.

JIAXING SUPER LIGHTING ELECTRIC APPLIANCE CO., LTD,
Patent Owner.

IPR2023-00271
Patent 10,295,125 B2

Before BRIAN J. McNAMARA, NEIL T. POWELL, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

McNAMARA, *Administrative Patent Judge*.

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

I. INTRODUCTION

Current Lighting Solutions, LLC d/b/a GE Current (“Petitioner” or “Current Lighting”) filed a petition, Paper 1 (“Petition” or “Pet.”), to institute an *inter partes* review (“IPR”) of claims 1, 2, 6, 9–11, 13–15, 29–34, 36, and 39–41 (the “challenged claims”) of U.S. Patent No. 10,295,125 B2 (“the ’125 patent”). *See* 35 U.S.C. § 311. Jiaxing Super Lighting Electric Appliance Co., LTD (“Patent Owner” or “Super Lighting”) timely filed a Preliminary Response, Paper 10 (“Prelim. Resp.”), contending that the Petition should be denied as to all challenged claims. We authorized Petitioner’s filing of a Reply to Preliminary Response (Paper 13, “Reply”) and Patent Owner’s filing of a Sur-reply (Paper 16 “Sur-reply”).

We have authority under 35 U.S.C. § 314, which provides that 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.”

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, per Board practice, if the Board institutes trial, it will institute “on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” *See* 37 C.F.R. § 42.108(a).

Having considered the arguments and the associated evidence presented in the Petition and the Preliminary Response, for the reasons described below, we institute *inter partes* review.

II. RELATED MATTERS

The Petition states that the ’125 patent is or was asserted in the following litigation:

Jiaxing Super Lighting Electric Appliance Co., Ltd. et al. v. Current Lighting Solutions, LLC d/b/a GE Current, Civil Action No. 6:22-cv-00534-ADA (W.D. Tex. 2022) (“Current Action”), filed May 24, 2022; and

Jiaxing Super Lighting Electric Appliance Co., Ltd. et al v. CH Lighting Technology Co., Ltd. et al., Civil Action No. 6-20-cv-00018 (W.D. Tex. 2020 (“CH Lighting Action”), filed January 10, 2020. Pet. 2.

Patent Owner identifies the above actions and the following additional related matter: U.S. Patent Ex-Parte Reexamination of US Patent No. 10,295,125, Reexam Control No. 90/015,003, filed April 11, 2022. Paper 4, 2.

III. REAL PARTIES IN INTEREST ISSUES UNDER 35 U.S.C. § 315(b)

Petitioner identifies itself, Current Lighting Solutions, LLC d/b/a GE Current as its real party-in-interest. Pet. 2. Patent Owner identifies itself, Jiaxing Super Lighting Electric Appliance Co., Ltd., as its real party-in-interest. Paper 4, 2. In addition, Patent Owner identifies Obert, Inc. and Zhejiang Super Lighting Electric Appliance Co. Ltd. as real parties-in-interest “[o]ut of an abundance of caution.” *Id.*

Patent Owner disputes Petitioner’s designation of itself as its sole real party-in-interest and contends that the Petition is time-barred because Patent Owner served Petitioner’s real party-in-interest, Shaoxing Ruising Lighting Company Ltd. (“Ruising”), with a complaint alleging infringement of the ’125 patent more than one year before Petitioner filed the instant Petition. Prelim. Resp. 2–18; 35 U.S. C. § 315(b)(2023).

A. Patent Owner’s Contentions

Patent Owner contends the instant Petition is barred under 35 U.S.C. 315(b) because the Petition was filed on December 14, 2022, more than two

years after a real party-in-interest, i.e., Ruising, was served with a complaint alleging infringement of the '125 patent. Prelim. Resp. 3. According to Patent Owner the Petition is barred because Petitioner and Ruising are privies (*id.* at 7–16) and because Ruising is a real party-in-interest (*id.* at 16–19).

Patent Owner's privity arguments focus on the following three factors articulated in *Taylor v. Sturgell*, 553 U.S. 880, 894–95 (2008): Factor 2—pre-existing substantive legal relationships between the parties, i.e., Petitioner and Ruising (*see* Prelim. Resp. 9–14); Factor 3—adequate representation by the named party, i.e. Ruising (*see id.* at 14–15); Factor 5—a non-party, i.e. Petitioner acting as a proxy for the named party Ruising to relitigate the same issues (*see id.* at 15–16). Turning to Factor 2, the pre-existing legal relationship between the parties, Patent Owner emphasizes a Supply Agreement [REDACTED]

[REDACTED]. Prelim. Resp. 9–10 (citing *Ventex Co., Ltd. v. Columbia Sportswear N.A., Inc.*, IPR2017-00651, Paper 148 at 11–12 (PTAB Jan. 24, 2019) (precedential); *Microsoft Corp. v. Science Applications International Corp.*, IPR2019-01311, Paper 35 (PTAB Jan. 27, 2020)(concerning continuing obligations under the contract notwithstanding allegations and jury findings of infringement); and *PayPal, Inc. v. Personal Web Technologies, LLC*, IPR2019-01111, Paper 27 (PTAB Nov. 22, 2019)(concerning indemnification obligations pertaining to an Amazon product implicated in infringement lawsuits the patent owner had filed against petitioners)). As to Factor 3 (adequate representation by the named party), Patent Owner contends that Ruising was a party to the CH Lighting Action and shared Petitioner's interests in invalidating the '125 patent.

Prelim. Resp. 14–15. As to Factor 5, [REDACTED]
[REDACTED] Patent Owner contends that by filing the Petition, Petitioner is acting as a proxy for Ruising, allowing Ruising to re-litigate the validity of the '125 patent. *Id.* at 15–16.

Patent Owner also contends that Ruising is a real party-in-interest (“RPI”). Prelim. Resp. 16–19. Arguing that the [REDACTED] relationship between Ruising and Petitioner is similar to that the Board addressed in *Ventex*, Patent Owner contends that Ruising, who has been found to infringe and is indisputably barred from filing an IPR, is a real party-in-interest because Ruising will benefit if Petitioner’s IPR is successful. Prelim. Resp. 17–19. According to Patent Owner, Petitioner’s distinct interests in invalidating the '125 patent have no bearing on whether Ruising is an RPI. *Id.* 18.

B. Petitioner’s Contentions

As to privity based on the alleged “pre-existing” relationship, Petitioner emphasizes that the Supply Agreement [REDACTED]

[REDACTED]. Reply 3. Petitioner contends that privity is foreclosed under the Supply Agreement, because, unlike the Petitioners in *Ventex*, in this case, Petitioner, who was not named in the suit and whose products were not even identified as infringing subject matter until Patent Owner served its Final Infringement Contentions, was the indemnitee, not the indemnitor. Reply 1–2. *Compare Ventex Co. Ltd. v. Columbia Sportswear N.A., Inc.*, IPR2017-00651, Paper 148 at 7 (P.T.A.B. Jan. 24, 2019).

As to privity and real party in interest based on current dealings with Ruising, Petitioner states that any purchases it makes from Ruising are by purchase orders that explicitly repudiate any prior obligations under the

Supply Agreement, including provisions of the Supply Agreement that survive its termination. *Id.* To the extent these purchase orders include any indemnification requirements, Petitioner contends that such requirements are standard purchase order terms and do not indicate a pre-existing relationship for purposes of determining privity. *Id.* at 3–4 (citing *R.R. Donnelley & Sons Co. v. Scriptchek Visual Verification Sys. Inc.*, IPR2021-00564, Paper 56 at 35-36 (P.T.A.B. Sept. 6, 2022)).

Petitioner emphasizes that the circumstances before us are distinguished from those in the cases Patent Owner cites. As Patent Owner did not sue Petitioner in the CH Lighting Action, Ruising’s obligations to indemnify Petitioner under the Supply Agreement were not triggered. Reply 1. Petitioner also notes that in the CH Lighting Action, Ruising was defending itself, not Petitioner, and that Ruising does not control the matter before us. *Id.* at 5 (citing *See VirnetX Inc. v. Mangrove Partners Master Fund, Ltd.*, 778 Fed. Appx. 897, 902-03 (Fed. Cir. 2019) for the proposition that evidence a non-party did not “exercise[] any control over these proceedings ... support[ed] the Board’s finding that [the non-party] did not need to be named as a[n] RPI”).

C. Analysis

Determining whether a non-party is a “real party in interest” demands a flexible approach that takes into account both equitable and practical considerations, with an eye toward determining whether the non-party is a clear beneficiary that has a preexisting, established relationship with the petitioner. *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1351 (Fed. Cir. 2018). Privity “is an equitable rule that takes into account the ‘practical situation,’ and should *extend to parties to transactions and other activities relating to the property in question.*” *Id.* at 1349 (emphasis

added) (citing 157 Cong. Rec. S1376 (Mar. 8, 2011) (statement of Sen. Kyl)). Nevertheless, the mere existence of a relationship between Petitioner and Ruising is not sufficient—that relationship must be related to the lawsuit and be sufficiently close that it can be fairly said the petitioner had a full and fair opportunity to litigate the validity of the patent in that lawsuit. *See WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1319 (Fed. Cir. 2018). On the record before us, the weight of the equities does not favor finding that the Petition is time-barred on the basis that Ruising is a privy, or real party in interest or because Petitioner is acting as a proxy for Ruising.

1. *Background*

Patent Owner filed its infringement suit (“Complaint”) against CH Lighting Technology (“CH”), Elliott Electric Supply (“Elliott”) and Ruising on January 10, 2020 and served Ruising on November 12, 2020. *See* Exs. 2003, 2004. Patent Owner’s Complaint alleged infringement of the ’125 patent that is the subject of the instant Petition, U.S. Patent 10,342,078, U.S. Patent 10,352,540, and U.S. Patent 10,426,003. *Id.* at 5 ¶ 16. Count 1 of the Complaint alleged a product designated KT-LED7T8-24GC-840-DX2 infringed the ’125 patent. *Id.* at 8–11 ¶¶ 31–42. The Complaint does not mention Petitioner and does not accuse any of Petitioner’s products of infringing the ’125 patent. *Id.* There is no evidence in the record that any relationship existed between Petitioner and Ruising when Patent Owner filed the Complaint and for nearly a year thereafter, including at the time Patent Owner served Ruising.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Patent Owner's Complaint did not accuse any of Petitioner's products listed of infringing the '125 patent. Ex. 2003, 8–11 ¶¶ 31–42. On March 19, 2020, Patent Owner served Preliminary Infringement Contentions that identified only products manufactured by CH and did not identify any of Petitioner's products as infringing. Ex. 2015, 3. [REDACTED]

[REDACTED]

On February 9, 2021, Patent Owner served Final Infringement Contentions that expanded the scope of accused products and, for the first time, identified one of Petitioner's products sold by Elliott. *Id.* at 3–4. Petitioner's only participation in the matter appears to have been to respond to a subpoena from Patent Owner. As Patent Owner did not sue Petitioner in the CH Litigation, Ruising had no obligation under the Supply Agreement to indemnify or act on Petitioner's behalf. When the CH action was tried in November 2021, Petitioner was not a party and there is no evidence that Petitioner participated in any way.

2. *Decision*

Patent Owner filed the Current Action, on May 24, 2022. Petitioner filed the Petition on December 14, 2022, well within the one-year statutory bar based on the Patent Owner's service of a complaint on Petitioner. *See* Paper 5, 1. [REDACTED]

[REDACTED]

None of Petitioner's products were alleged to infringe the '125 patent at the time Patent Owner filed the CH Lighting Action, at the time Patent Owner served Ruising, or at the time Petitioner and Ruising entered into the Supply Agreement. The first time Patent Owner alleged any of Petitioner's products infringed the '125 patent was in its Final Infringement Contentions in the CH Lighting Action, i.e., more than a year after Patent Owner filed the CH Lighting Action and [REDACTED]

[REDACTED]

Petitioner notes that Patent Owner relies on the Supply Agreement to establish a pre-existing relationship. Reply. 3. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Although the Complaint alleged infringement of the '125 patent by Elliott and CH, the alleged infringement did not implicate Petitioner's products. It was not until long after Patent Owner initiated the

CH Lighting Action that Patent Owner alleged one of Petitioner's products infringed. As Patent Owner did not sue Petitioner, indemnification obligations under the Supply Agreement were not triggered. Throughout the duration of the suit, Ruising was operating in its own interests, independent of those of Petitioner. As Petitioner points out, the circumstances before us are also distinguished from those in *Ventex*, where the petitioner was the indemnitor, not the indemnitee. We agree that as the non-sued indemnitee, under the circumstances, Petitioner was not afforded a full and fair opportunity to litigate patent validity in the CH Lighting Action. Reply 3.

There is no evidence that Ruising is a real party in interest in this proceeding or that Petitioner pursued this proceeding as a proxy for Ruising. The outcome of the CH Lighting Action is independently on appeal to the Federal Circuit. Reply 2–3. The outcome of that appeal will affect Ruising directly. As Petitioner was not a party to the CH Litigation, Petitioner is not a party in the appeal. The Petition before us was filed only after Patent Owner sued Petitioner, and we determine that Petitioner is acting in its own defensive interest, not as a proxy for Ruising. *Id.* at 1. Petitioner also emphasizes that, notwithstanding any indemnity obligations, Petitioner prepared the Petition without any input or participation from Ruising and that Ruising has no control over this proceeding. *Id.* at 1, 5.

That Petitioner is acting on its own behalf in this matter is further supported by Patent Owner's infringement allegations concerning products other than those addressed in the CH Lighting Action. [REDACTED]

[REDACTED]
[REDACTED] in the
Current Action, Patent Owner alleges certain of Petitioner's products not mentioned in the CH Lighting Action infringe the '125 patent. Ex. 3001 ¶

60 (identifying the LED14BDT8/G4/840, addressed in the CH litigation as a representative product, but alleging that additional Current Lighting products infringe as well). These new allegations against Petitioner could not have been the subject of a defense in the CH Litigation.

Weighing the equities in view of the circumstances, we are not persuaded that the evidence supports a sufficiently close relationship between Ruising and Petitioner as to create a time bar to the Petition. We conclude, based on due process considerations, that Ruising is not a privy or real party in interest in this proceeding and that Petitioner is not acting as a proxy for Ruising. Therefore, the Petition is not time barred.

IV. EXERCISE OF DISCRETION

In the Preliminary Response, Patent Owner contends that we should exercise our discretion to deny the Petition in favor of the Current Action. Prelim. Resp. 19–26. The Board has held that the advanced state of a parallel district court action is a factor that may weigh in favor of denying a petition under § 314(a). *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential); Trial Practice Guide, 58 & n.2. We consider the following factors to assess “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding”:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;

5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). In evaluating these factors, we “take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6.

On June 21, 2022, the Director of the USPTO issued several clarifications concerning the application of the *Fintiv* Factors. *See Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation*, issued June 21, 2022 (“Guidance Memo”).¹ The Director’s memo states that

[c]onsistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.

Guidance Memo, 7–8; *see Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A).

Petitioner has offered to submit a *Sotera* stipulation in the parallel proceeding. *See* Ex. 1032. In addition, on July 17, 2023 the parties filed a Joint Motion to Stay All Deadlines and Notice of Settlement in the Current Action. *See* Current Action, Paper 96. The district court granted the motion and stayed the Current Action for 30 days. *Id.* The district court also cancelled a Markman hearing scheduled for July 19, 2023. The parties have

¹ Available at [https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621 .pdf](https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf).

not moved to terminate this pending *inter partes* review. In view of the circumstances, we decline to exercise discretion to deny institution.

V. THE '125 PATENT

The '125 patent concerns LED tube lamps. Ex. 1001 (code 54). The '125 patent describes typical LED tube lamps as having a lamp tube, a circuit board disposed inside the lamp tube with LED light sources mounted thereon, and end caps accompanying a power supply at two ends of the lamp transmitting power to the light source through the circuit board. *Id.* at 2:39–44. The '125 patent incorporates a protective layer disposed on the LED light strip with a plurality of openings to accommodate LED light sources and at least two soldering pads. *Id.* at 3:25–31, 36–40.

The '125 patent discloses a lamp in which an LED light strip with LED light sources is bonded or affixed to an inner side of the lamp tube via an adhesive sheet (*id.* at 28:24–28), and an end cap is affixed to the end portion of the light tube, where power supplies can be located (*id.* at 30:60–64. Diffusion films and coatings on the glass tube diffuse transmitted light (*id.* at 24:23–44), and reflective films reflect light from the LED sources in desired directions (*id.* at 25:54–26:20).

VI. ILLUSTRATIVE CLAIM[S]

Independent claim 1, reproduced below with claim element designations used in the Petition, is illustrative of the subject matter of the '125 patent. *See* Pet. v.

[1.p] An LED tube lamp, comprising:

[1.a] a lamp tube;

[1.b] two end caps, each of the two end caps coupled to a respective end of the lamp tube;

[1.c] a power supply disposed in one or two end caps;

[1.d] an LED light strip disposed on an inner circumferential surface of the lamp tube, the LED light strip

comprising a mounting region and a connecting region, the mounting region for mounting a plurality of LED light sources, the connecting region having at least two soldering pads, and the mounting region and the connecting region being electrically connected to the plurality of LED light sources and the power supply; and

[1.e] a protective layer disposed on a surface of the LED light strip, the protective layer having a plurality of first openings to accommodate the plurality of LED light sources and at least two second openings to accommodate the at least two soldering pads.

VII. ASSERTED GROUNDS

Petitioner asserts that claims 1, 2, 6, 9–11, 13–15, 29–34, 36, and 39–41 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1, 2, 6, 9–11, 13–15		Takahashi, Shimasaki
1, 2, 6, 9, 13–15		Guang, Shimasaki
10, 11		Guang, Shimasaki, Takahashi
1, 2, 6, 9–11, 13–15		Takahashi, Shimasaki, Jing
1, 2, 6, 9–11, 13–15		Guang, Shimasaki, Jing
10, 11		Guang, Shimasaki, Takahashi, Jing
2, 29–34, 36, 39–41		Takahashi, Shimasaki, Takigami
2, 29–34, 36, 39		Guang, Shimasaki, Takigami
40, 41		Guang, Shimasaki, Takahashi, Takigami
2, 29–34, 36, 39–41		Takahashi, Shimasaki, Jing, Takigami
2, 29–34, 36, 39–41		Guang, Shimasaki, Jing, Takigami
40, 41		Guang, Shimasaki, Takahashi, Jing, Takigami

In support of the Petition, Petitioner also relies on the direct testimony of Dr. R. Jacob Baker. Ex. 1002, Baker Decl.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner describes a person of ordinary skill in the art (“POSA” or “ordinarily skilled artisan”) at the time of the ’125 patent’s earliest claimed priority date as having “a Bachelor’s degree in electrical engineering, or an equivalent field, as well as at least 1–2 years of academic or industry experience in lighting design, including knowledge of [light emitting diodes] (LEDs) and related technology for driving LEDs.” Pet. 7 (citing Ex. 1002 ¶ 26). Petitioner also notes that “[a] person of ordinary skill in the art with a higher level of education may have fewer years of academic or industry experience, or vice versa.” *Id.* Patent Owner does not comment on the level of ordinary skill. *See generally*, Prelim. Resp.

The level of ordinary skill in the art usually is evidenced by the references themselves. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). As Petitioner’s description of an ordinarily skilled artisan appears to be commensurate the subject matter of the ’125 patent and the references, we apply it for purposes of this Decision.

IX. CLAIM CONSTRUCTION

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2019). In this context, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc). “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). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317 (citations omitted).

Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe only those claim terms that require analysis to determine whether to institute inter *partes* review. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

The parties discuss the construction of the following terms:

A. electrically connected/coupled

Petitioner states this term does not need explicit construction and that it encompasses direct connections and indirect connections via intervening components. Pet. 16. Patent Owner agrees that no construction is required and states that the plain and ordinary meaning should control. Prelim. Resp. 32. Based on the arguments and evidence currently of record, we determine that no construction of this term is required.

B. disposed on an inner circumferential surface of the lamp tube.

This term first appears as part of claim limitation 1.d (“an LED light strip disposed on an inner circumferential surface of the lamp tube . . .).

See Pet. v. Petitioner contends that this term does not need explicit construction, but notes that the Specification expressly states the term “on” covers both direct contact and contact through intervening elements. Pet. 16 (citing Ex. 1001, 12:5–15).

Patent Owner argues that “to support its invalidity allegations,” Petitioner would “twist and enlarge the scope of this term beyond what a POSA would reasonably understand in view of the entire specification and prosecution history.” Prelim Resp. 33. Patent Owner states that in Sections V.A.1 and V.B.1 of the Preliminary Response, Patent Owner sets forth reasons and examples why Petitioner’s overly broad construction would lead to a result that is anything but plain and ordinary. *Id.*

The Specification of the ’125 patent cited by Petitioner reads “it will be understood that when an element is referred to as being ‘connected’ or ‘coupled’ to or ‘on’ another element, it can be directly connected or coupled to or on the other element or intervening elements may be present.” Ex. 1001, 12:5–15. The text of the Specification also states “[i]n contrast, when an element is referred to as being ‘directly connected’ or ‘directly coupled’ to another element, there are no intervening elements present.” *See id.* at 12:8–14. The Specification further states that the only exception to this understanding is the word “contact,” which “as used herein refers to direct contact (i.e. touching) unless the context indicates otherwise.” *Id.* at 12:14–17.

According to Patent Owner, this text in the Specification “merely distinguishes phrases such as ‘on,’ ‘connected,’ or ‘coupled’ from ‘directly connected,’ ‘directly coupled’ and similar language” and “[t]here is nothing cited by Petitioner that amounts to a ‘special definition’ that ‘differs from

the [plain and ordinary] meaning it would otherwise possess.” Prelim. Resp. 41 (citing *Phillips*, 415 F. 3d at 1316).

It is difficult to see how the Specification could have been more unequivocal in defining “on” as consistent with Petitioner’s interpretation. The Specification explicitly distinguishes the term “on” from “directly on.” The Specification states “on” should be read to mean “directly . . . on the other element . . . or intervening elements may be present,” i.e., permitting, but not requiring, the presence of one or more intervening elements. Ex. 1001, 12:5–8. The Specification explicitly contrasts “connected,” “coupled” or “on” with the use of a further limiter, i.e., “directly” to mean “there are no intervening elements present” and provides only one exception, i.e., “contact.” Ex. 1001, 12:8–15. The Specification goes to provide additional examples of “[o]ther words used to describe the relationship between elements,” including distinguishing “between” from “directly between” and “adjacent” from “directly adjacent.” *Id.* at 12: 11–14. In view of the Specification’s explicit guidance, we agree with Petitioner that an element that is disposed “on” another element does not preclude the presence of one or more intervening elements and the elements need not be directly touching.

X. ANALYSIS

A. Introduction

“In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never

shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

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 ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

A reason to combine or modify the prior art may be found explicitly or implicitly in market forces; design incentives; the “interrelated teachings of multiple patents”; “any need or problem known in the field of endeavor at the time of invention and addressed by the patent”; and the background knowledge, creativity, and common sense of the person of ordinary skill. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328–29 (Fed. Cir. 2009) (quoting *KSR* 550 U.S. at 418–21).

In determining whether a claim is obvious in light of the prior art, when in evidence, we consider any relevant objective evidence of non-obviousness. *See Graham*, 383 U.S. at 17. Notwithstanding what the teachings of the prior art would have suggested to one of ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of non-obviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). At this stage of the proceeding Patent Owner does not present evidence of such objective considerations

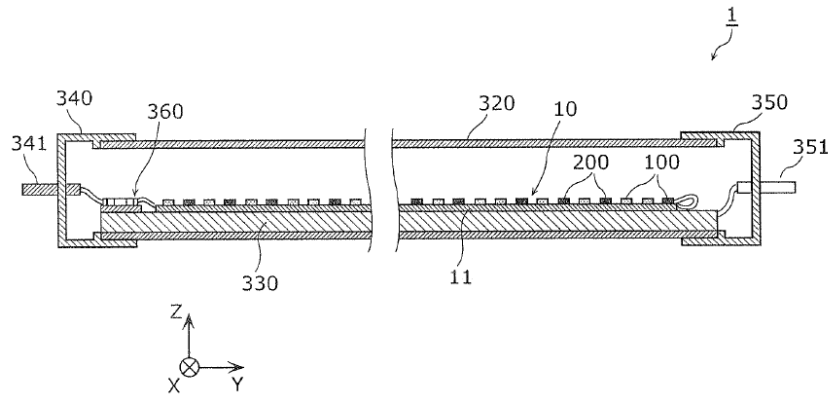
We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of success at trial.

B. Petitioner’s Contention That Claims 1, 2, 6, 9–11, and 13–15 Would Have Been Obvious over Takahashi and Shimasaki (Ground 1)

1. Takahashi (Ex. 1005)

Takahashi discloses an LED tube lamp with a switch to engage either a first series-connected LED array or a second series-connected LED array that emits light at a color different from that of the first series-connected LED array. Ex. 1005 (code 57). Figure 2 of Takahashi, reproduced below,

is a cross-sectional view in the tube axis direction of the straight-line tube LED according to one embodiment. *Id.* at 4:19–20.



Id. Fig. 2. Figure 2 shows LED module 10 with different color LED elements 100, 200, surface mounted on board 11. *Id.* at 8:5–15. Drive circuit 360 is disposed inside feeding base 340 via a lead wire connected to a connection terminal on board 11. Examples of elongated board 11 on which LED elements are mounted include a glass epoxy board, a flexible board including polyimide, and an aluminum alloy board having an insulated film on a surface. *Id.* at 9:9–18. When viewed planarly front and back surfaces of board 11 are rectangular. *Id.* 9:18–20. To enhance reflectivity and protect the wiring, a white resist may be applied to the front surface of board 11. *Id.* at 9:20–22.

A perspective view of this embodiment is shown in Figure 3, reproduced below.

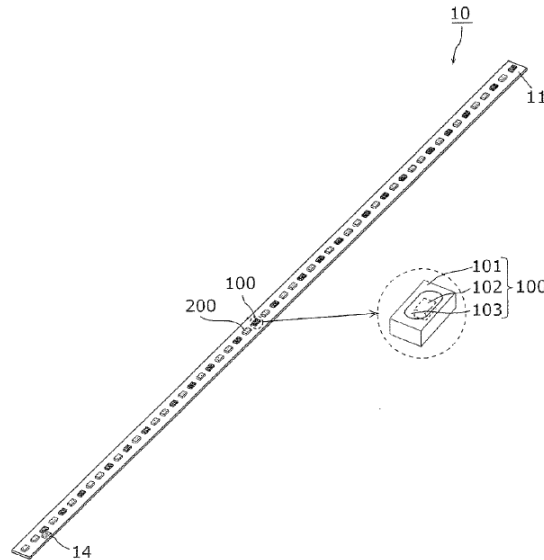
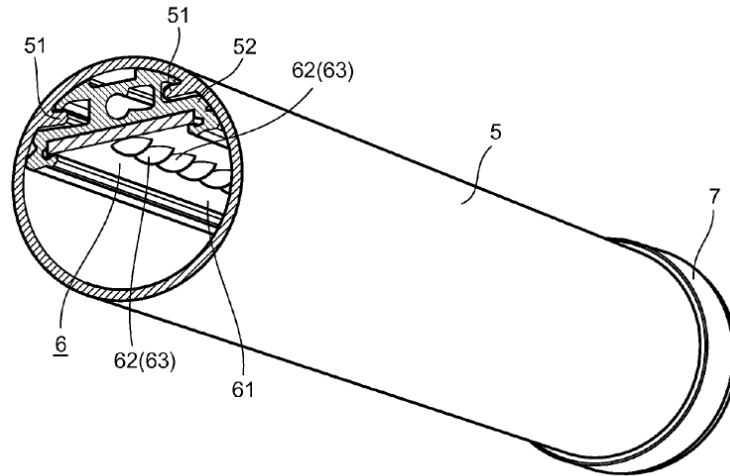


Figure 3 shows connection terminal 14 provided on board 11. *Id.* at 9:37–38. Lines 104, 204 connecting LEDs 100, 200, respectively, and common line 304 (not shown in Figure 3) are formed on board 11. *Id.* at 9: 27–34; *see id.* Figure 4. Lines 104, 204, and 304 are connected to connection terminal 14 and to drive circuit 360 inside feeding base 340. *Id.* at 9:37–40. A lead wire is soldered to connection terminal 14 to be fixed to board 11. *Id.* at 9:40–42; *see also* Pet. 24 (annotated view of Ex. 1005, Fig. 2 showing Takahashi’s protective layer, openings for electrical connections, and connection from power supply 360 to board 11)

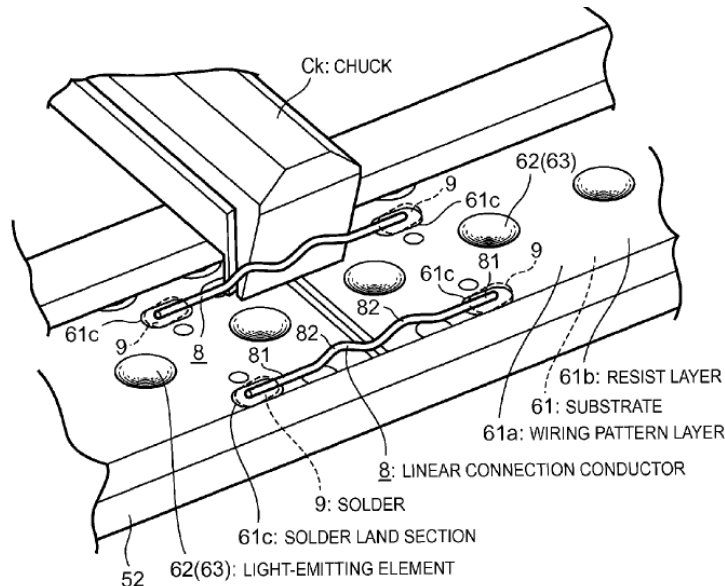
2. Shimasaki (Ex. 1006)

Shimasaki discloses a luminaire, i.e., an LED lamp tube, with improved soldering and wiring. *See, e.g.,* Ex. 1006, 2:35–3:22. Figure 2 of Shimasaki, reproduced below, is a perspective view.



Ex. 1006, Fig. 2. In Figure 2, main body 5 is formed in a substantially cylindrical shape, elongated attachment member 52 is supported by supporting rails 51 and disposed along the longitudinal direction of the main body 5, and light source section 6 has a plurality of substrates 61 disposed in the longitudinal direction. Ex. 1006, 4:19–23, 4:33–39.

Figure 5 of reproduced below, is perspective view of a part of a joining process for a linear conductor. *Id.* at 2:1–3.



Ex. 1006, Fig. 5. In Figure 5, “[a] wiring pattern layer 61a formed of a copper foil is formed on the front surface side of the substrate 61.” *Id.* at

4:43–52. “A resist layer 61b is laminated on the wiring pattern layer 61a as appropriate.” *Id.* “The resist layer 61b is a white resist layer having high reflectance.” *Id.* “The resist layer 61b is laminated over substantially the entire surface of the front layer of the substrate 61 excluding a mounting region of the light-emitting elements 62 and solder land sections 61c.” *Id.* “The solder land sections 61c are a part of the wiring pattern layer 61a and are portions where the wiring pattern layer 61a, on which the resist layer 61b is not laminated, is exposed to the surface and formed in a corner-rounded rectangular shape.” *Id.*, 6:24–30.

3. *Reasons to Combine*

Noting that Takahashi discloses applying white resist layer to the front surface of board 11 in order to enhance reflectivity and protect wiring, Petitioner states that Takahashi does not discuss resist layer details, e.g., openings to accommodate the LEDs or solder pads for connection to the power circuits in Figure 7. Pet. 23–25 (citing Ex. 1005, 9:20–22, Figs 3, 4; Ex. 1002, Baker Decl. ¶¶ 59, 65, 66).

Petitioner cites Shimasaki as disclosing light source section 6 having a plurality of linearly arranged light emitting elements 62 mounted longitudinally on substrate 61. Pet. 27 (citing Ex. 1006, 4:33–39). Petitioner notes that Figure 5 of Shimasaki discloses white, high reflectance resist layer 61b laminated on the entire front surface side 61a of substrate 61, except at solder land sections 61c on surface 61a. *Id.* at 28 (citing Ex. 1006, 4:44–52, 6:24–30, Fig 5 (showing conductors 8 connected by solder 9 and solder lands 61c)).

According to Petitioner a person of ordinary skill would have understood the need to include openings in Takashai’s protective layer for solder pads and LEDs to properly connect the components, e.g., to connect

LEDs to the wiring lines on the board and connect the lines to a connection terminal (soldering pads) and to the drive circuit (power supply). *Id.* at 23–25 (citing Ex. 1005, 9:27–42, Fig. 4), 29–30 (citing Ex. 1005, 9:20–22, 9:40–42), 30–33 (citing Ex. 1002, Baker Decl. ¶¶ 65, 66). Noting that Shimasaki explicitly teaches such openings with solder lands in the resist layer to accommodate LED and board level connections, Petitioner contends (i) that such connection techniques were already known in the art to be used successfully and (ii) that an ordinarily skilled artisan would have had reason to use Shimasaki’s resist layer openings and solder lands in Takahashi to form a reliable non-oxidizing connection. *Id.* at 34–35 (citing Ex. 1006, 3:42–46, 3:51–61; Ex. 1002, Baker Decl. ¶¶ 68, 69).

Patent Owner contends that Petitioner has not demonstrated a person of ordinary skill would have had reason to combine the teachings of Takahashi and Shimasaki. Prelim Resp. 44–52. According to Patent Owner, Petitioner’s assertion that an ordinarily skilled artisan would have recognized only a limited number of options for establishing connections through the resist layer (e.g., solder connections or plug connections) or not using the resist layer is conclusory and questionable. Prelim. Resp. 44–46. Noting that the ’125 patent disclosed reducing the amount of welding or soldering to improve reliability (*id.* at 46–47, citing Ex. 1001 51:37–41, 52:10–16) and that Shimasaki identifies solder joints as weak points in LED lamps (*id.* at 47 citing Ex. 1006, 2:48–51), Patent Owner simultaneously argues that the combination of Takahashi and Shimasaki provides no benefit because the advantage provided by one reference is redundant to the advantage by the other. *Id.* at 47–48. Patent Owner further contends that neither Takahashi nor Shimasaki is about white resist and electrical connection, but that most parts of Takahashi are about providing a light

source capable of switching between emission colors and brightness. *Id.* at 48. According to Patent Owner, the lack of detail for Takahashi's connection terminal and its casual reference to white resist shows that these features are far from the focus of Takahashi's invention. *Id.* at 49. Finally, Patent Owner contends that Shimasaki is directed to solving reliability issues in a mass, automated process using a linear conductor and solder lands with particular characteristics. *Id.* at 51 (citing Ex. 1005, 2:57–63, 6:41–56). Patent Owner notes that Shimasaki's linear conductor is designed to be soldered between two printed circuit board (PCB) substrates so that a mechanical arm can grab the PCBs without unintentionally breaking or cracking the solder joints. *Id.* at 52–53.

Petitioner has demonstrated sufficient rationale to support a determination that a person of ordinary skill would have looked to Shimasaki for its teachings concerning the use of openings in the resist layer and solder lands to connect to wiring on the PCB. Although the resist layer is not the focus of Takahashi, as Petitioner points out, both Takahashi and Shimasaki disclose LED tube devices that use resist layers. The absence of a description of how necessary connections are made through the resist layer in Takahashi suggests that the technology was well known, so as not to require description, or that a person of ordinary skill would have had reason to seek out additional teachings to make such connections. That Shimasaki deals with specific characteristic of the solder lands and wiring specific to manufacturing processing in which a chuck creates stress on solder joints does not alter Shimasaki's fundamental disclosure relied on by Petitioner. There is no redundancy because Petitioner relies on Shimasaki for its disclosure lacking in Takahashi, i.e., Shimasaki's disclosure of openings in

the resist layer and corresponding solder lands for wiring because Shimasaki concerns improving the reliability of soldering in LED tubes.

4. *Claim 1*

a) *Preamble 1.p and Claim Limitations 1.a–1.c*

The preamble of claim 1 recites and LED tube lamp. Petitioner cites Takahashi as teaching and LED tube lamp. Pet. 36–37(citing Ex. 1005, 6:28–54, Figs. 1, 2; Ex. 1002 ¶ 54).

Petitioner designates as claim limitation 1.a the recitation “a lamp tube.” Pet. v. Petitioner cites Takahashi and Shimasaki as rendering this limitation obvious. Pet. 37. Petitioner explicitly cites Takahashi its teaching of straight tube LED lamp one as including elongated case 320 housing LED module 10. *Id.* (Ex. 1005, 6:41–43; Ex. 1002 ¶ 55).

Petitioner designates as claim limitation 1.b the recitation of two end caps coupled to a respective end of the lamp tube and as claim limitation 1.c the recitation “a power supply disposed in one or two end caps.” Pet. v. Petitioner asserts that the combined teachings of Takahashi and Shimasaki render these claim limitations obvious. Petitioner explicitly cites Takahashi as teaching that drive circuit 360 includes constant power output circuit 20 and rectifier circuit 40. *Id.* at 39–40 (citing Ex. 1005, 18:20–23, 13:48–60, 6:55–60, Fig. 7; Ex. 1002, Baker Decl. ¶ 58. Petitioner also cites Takahashi as disclosing that drive circuit 360 (the claimed power supply) may be disposed inside feeding base 340 (the claimed end cap). *Id.* at 39 (citing Ex. 1005, 8:16–19, 9:38–40, Fig. 2; Ex. 1002, Baker Decl. ¶ 57).

Patent Owner does not respond to Petitioner’s assertions concerning the preamble or claim limitations 1.a–1.c. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that

Takahashi and Shimasaki, in combination, teach the elements recited in the preamble and claim limitations 1a–1.c.

b) Limitations 1.d and 1.e

Petitioner identifies as claim limitation 1.d the recitation “an LED light strip disposed on an inner circumferential surface of the lamp tube, the LED light strip comprising a mounting region and a connecting region, the mounting region for mounting a plurality of LED light sources, the connecting region having at least two soldering pads, and the mounting region and the connecting region being electrically connected to the plurality of LED light sources and the power supply.” Pet. v.

Petitioner identifies as claim limitation 1.e the recitation “a protective layer disposed on a surface of the LED light strip, the protective layer having a plurality of first openings to accommodate the plurality of LED light sources and at least two second openings to accommodate the at least two soldering pads.” *Id.*

Petitioner cites Takahashi as teaching a light strip that is disposed on the inner surface of the light tube, as recited in limitation 1.d. Pet. 40 (citing Ex. 1002, Baker Decl. ¶ 64; Ex. 1005, 7:47–58). Petitioner cites Figures 1 and 2 of Takahashi as illustrating LED module 10 (the claimed LED light strip) attached to base platform 333 and disposed on an inner circumferential surface of elongated case 320 (the claimed tube). *Id.* Petitioner provides the following annotated version of Figure 4 of Takahashi.

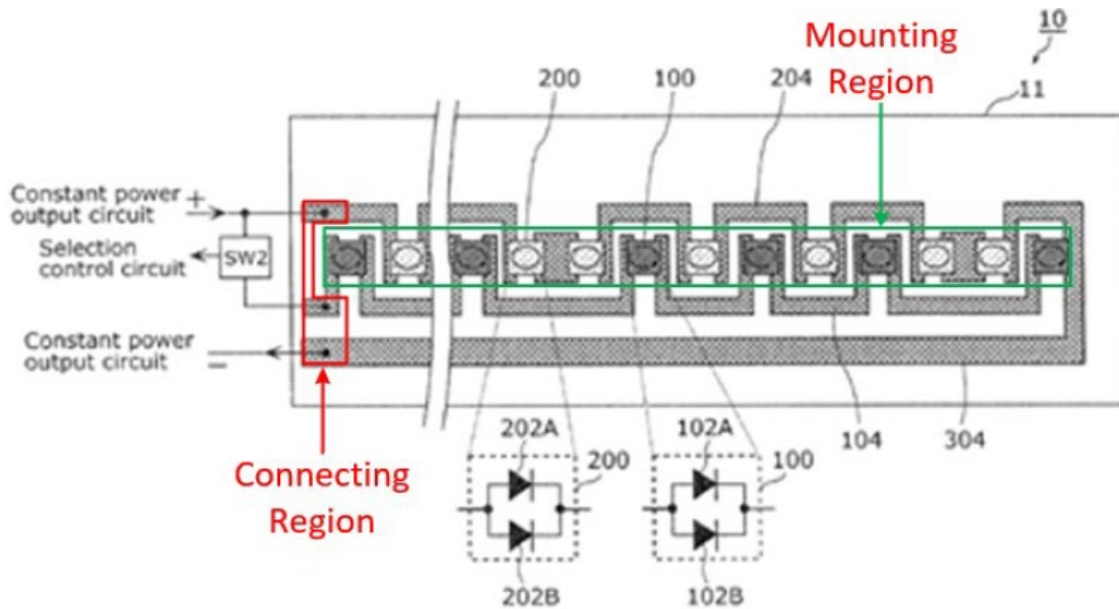


Figure 4 of Takahashi

Pet. 41. Petitioner points out that Takahashi illustrates the claimed mounting region (highlighted in green) for mounting LED light sources (LED elements 100/200) and the claimed connecting region (highlighted in red) having at least two soldering pads. *Id.* Petitioner further notes that Takahashi discloses lines 104, 204, and 304 are connected to connection terminal 14 on board 11 and to drive circuit 360 provided inside feeding base 340. *Id.* (citing Ex. 1005, 9:38–40). Drive circuit 360 includes constant power output circuit 10 and is connected to board 11 by a lead wire soldered at connection terminal 14 to be fixed to board 11. *Id.* at 41–42 (citing Ex. 1005, 9:40–42, 8:16–23). Petitioner also notes that the negative output terminal of constant output power circuit 20 connects to the cathode terminals of LED arrays 100A, 100A and the positive output terminal of power circuit 20 connects to the anode terminal of LED array 200A and FET switch SW2. *Id.* at 42 (citing Ex. 1005, 15–11–15, Fig. 7). According to Petitioner, a person of ordinary skill “would have understood that Takahashi’s drive circuit 360 is connected to the board 11 via three different

connections using a soldered lead wire in the connecting region in FIG.4,” and “[thus] Takahashi’s connecting region has at least two soldering pads.” *Id.* at 43 (citing Ex. 1002, Baker Decl. ¶ 58).

Petitioner cites as consistent with Takahashi Shimasaki’s teaching of an “LED light strip having a mounting region for mounting LEDs electrically connected to a connecting region having soldering pads and to a power supply, and attached to an inner circumferential surface of the lamp tube via an attachment member.” *Id.* (citing Ex. 1006, FIGS.2, 5, 6; 3:11–16, 4:12–26, 4:33–52, 6:24–40; EX1002, Baker Decl. ¶ 61).

As to claim limitation 1.e, Petitioner cites the combination of Takahashi and Shimasaki as disclosing a light strip having openings for the LED source and at least two solder pads and Takahashi as disclosing that a white resist layer may be applied to the board to enhance reflectivity and protect wiring. *Id.* at 43 (citing Ex. 1005, 9:20–22). Petitioner also cites Shimasaki as disclosing a high reflectance white resist layer laminated over substantially the entire surface of the front layer of substrate 61, excluding the mounting region of the light emitting elements and the solder lands. *Id.* at 43–44 (citing Ex. 1006, 4:40–52). *See also*, Ex. 1002, Baker Decl. ¶ 63.

Noting that Takahashi discloses base platform 330 holds LED module 10, Patent Owner contends that Takahashi does not disclose an LED light strip disposed on an inner circumferential surface of the lamp tube, as recited in limitation 1.d. Prelim. Resp. 34–44. Patent Owner contends that, in Takahashi, the LED module is located on an elongated flat surface of the base platform and it is this base platform, rather than the LED module, that is fixed to the inner surface of case 320. *Id.* at 36–38. (citing Ex. 1005, 7:47–51, 55–56).

According to Patent Owner, interpreting the claim as a whole, Takahashi's base platform cannot be an intervening element such that the LED module is disposed on the inner circumference of the tube because the expression "disposed on" is used twice—once for the lighting strip recited in limitation 1.d and once for the protective layer recited in limitation 1.e—and cannot be used differently in the same claim. *Id.* at 38. In our claim construction analysis, we addressed Patent Owner's arguments concerning the meaning of "on." Based on the explicit definitions in the Specification in any limitation the term "on" can mean an element is either directly on and element or intervening elements are present. This is distinguished from an element that is "directly on" another element, where no intervening elements are present. *See* Ex. 1001, 12:5–17.

Finally, although Patent Owner also contends that "Takahashi does not consider the base platform as part of the LED module," (Prelim. Resp. 42–43), the issue before us is what the combination of Takahashi and Shimasaki would have taught a person of ordinary skill.

Having considered the evidence of record, we find that Petitioner has demonstrated that Takahashi and Shimasaki, in combination, teach claim limitations 1.d and 1.e to a person of ordinary skill.

c) Conclusion as to claim 1

In consideration of the above, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination, they teach all the limitations of claim 1.

5. *Claim 2*

Claim 2 depends from claim 1 and recites that “the protective layer further comprises a third opening adjacent to the two second openings.” Petitioner cites Takahashi as disclosing three adjacent solder land sections one for each of lines 104, 204, 304, and Shimasaki as teaching the protective layer should not be applied to solder land sections. Pet. 44 (citing Ex. 1005, Figs. 4, 7; Ex. 1006, 4:40–52, 6:26–34; Ex. 1002 Baker Decl. ¶ 98).

Patent Owner does not respond to Petitioner’s assertions concerning claim 2. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 2.

6. *Claim 6*

Claim 6 depends from claim 1 and recites that “the LED light strip further comprises a first wiring layer, wherein the plurality of LED light sources are disposed on a first side of the first wiring layer and are electrically connected to the first wiring layer.” Petitioner cites Takahashi as disclosing the LED light strip includes a wiring layer, e.g., 104, 204, and 304, and LED elements 100 and 200 disposed on and electrically connected to a first side of the wiring layer. Pet. 44–45 (citing Ex. 1005, 8:25–33, 9:9–42, Fig. 4).

Patent Owner does not respond to Petitioner’s assertions concerning claim 6. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 6.

7. *Claim 9*

Claim 9 depends from claim 1 and recites “at least one of the two end caps comprises at least one conductive pin electrically connected to the power supply.” Petitioner cites Takahashi as disclosing feeding base 340 having feeding pin 341 is demonstrating the claimed end cap and conductive pin electrically connected to drive circuit 360, i.e., the claimed power supply. Pet. 46 (citing Ex. 1005, 6:36–65, Figs. 1, 2). Petitioner also cites Shimasaki as describing endcap sections 7 having power supply terminals 71 electrically connected to power supply. *Id.* at 47.

Patent Owner does not respond to Petitioner’s assertions concerning claim 9. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 9.

8. *Claim 10*

Claim 10 depends from claim 1 and recites that the LED lamp further comprises, “a diffusion film coated on a surface of the lamp tube.” Petitioner cites Takahashi as disclosing an exemplary light diffusion unit the light diffusion film provided to at least one of the inner surface and outer surface of case 320. *Id.* at 47–48 (citing Ex. 1005, 7:23–45).

Patent Owner does not respond to Petitioner’s assertions concerning claim 10. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 10.

9. *Claim 11*

Claim 11 depends from claim 10 and recites “the diffusion film is coated on an inner surface of the lamp tube.” Petitioner cites Takahashi as disclosing a light diffusion film provided to the inner surface of the case 320. *Id.* at 48.

Patent Owner does not respond to Petitioner’s assertions concerning claim 11. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 11.

10. *Claim 13*

Claim 13 depends from claim 1 and recites “the LED light strip attached to an inner surface of the lamp tube.” Petitioner cites its discussion of claim limitation 1.d as demonstrating the LED light strip is held by base platform 330 that is firmly fixed to the inner surface of case 320. Pet. 48. Petitioner contends that an ordinarily skilled artisan would have recognized that many ways exist to attach LED strips within lamp tubes, including attaching the strip directly to the inner circumferential surface of the lamp tube. *Id.* (citing Ex. 1002, Baker Decl. ¶ 36). According to Petitioner, selecting one method over another is a mere substitution of known techniques for attaching an LED light strip to a lamp tube yielding predictable results. *Id.*

Our discussion of claim construction notes that the Specification of the ’125 patent explicitly states that all terms other than “contact” (which is limited to touching) are to be read as including both direct attachment and attachment through an intervening element. *See* Section IX.B herein. In view of this construction, we agree with Petitioner’s analysis of claim 13.

Patent Owner does not respond to Petitioner’s assertions concerning claim 13. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 13.

11. *Claim 14*

Claim 14 depends from claim 1 and recites “wherein the power supply comprises a circuit board disposed inside one of the end caps, the circuit board electrically connecting the connecting region.” Petitioner cites Takahashi as disclosing drive circuit 360 disposed inside feeding base 340 via a lead wire connected to a connection terminal on board 11. Pet. 49–50 (citing Ex. 1005, 8:16–19, Figs. 3, 4, 7). Petitioner further notes that an ordinarily skilled artisan would recognize the circuit, such as drive circuit 360 would include a circuit board. *Id.* at 50 (citing Ex. 1002, Baker Decl. ¶ 58).

Patent Owner does not respond to Petitioner’s assertions concerning claim 14. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 14.

12. *Claim 15*

Claim 15 depends from claim 14 and recites “the circuit board is parallel to a longitudinal direction of the lamp tube.” Petitioner cites Takahashi as demonstrating the circuit board of drive circuit 360 is parallel to a longitudinal direction of elongated case 320. Pet. 50 (citing Ex. 1005, 8:16–19, Fig. 2).

Patent Owner does not respond to Petitioner’s assertions concerning claim 15. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi and Shimasaki and that in combination they teach the elements recited in claim 15.

C. Petitioners Contentions That Claims 1, 2, 6, 9, 13–15 Would Have Been Obvious Over Guang and Shimasaki (Ground 2)

1. *Guang (Ex. 1007)*

Guang discloses “an LED lamp tube and driver circuit that works with standard AC high voltage current input into either end of the lamp tube, that is, with no ballast, and that also works with a ballast delivering its high frequency pulse current or lower voltage input, in either case converting the power input to constant direct current (DC) to light up the LED lamp tube.” Ex. 1007, 5:55–61.

2. *Claim 1*

a) *Preamble 1.p and Claim Limitations 1.a–1.c*

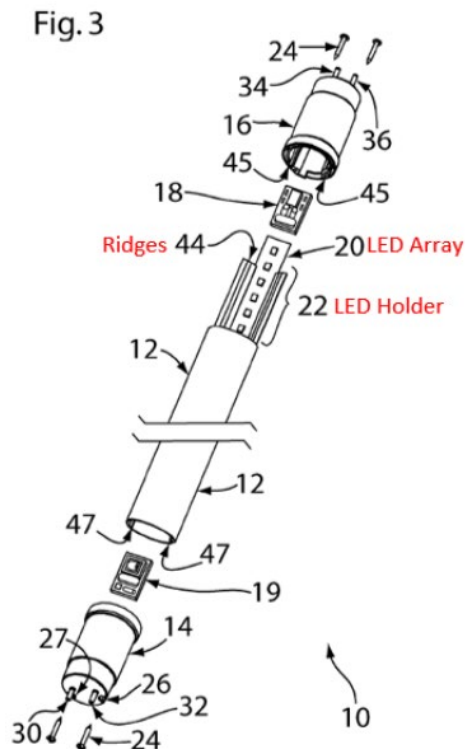
Petitioner cites Guang as disclosing an LED tube lamp, as recited in the preamble, with a driver circuit that is a direct replacement for fluorescent tubes. Pet. 59. As to limitation 1.a, a lamp tube, Petitioner cites Guang’s disclosure of a lamp tube. *Id.* at 60 (citing Ex. 1007, 6:26–30). As to limitation 1.b, end caps coupled to respective ends of the lamp, Petitioner cites Guang’s disclosure of end caps (PCB housings 14, 16) at each end of tube 12. *Id.* at 60–61 (citing Ex. 1007, 6:26-30; 15:1-7; Figs. 3–4). As to limitation 1.c, a power supply disposed in one or two of the end caps, Petitioner cites Guang’s disclosure of a rectifier and filter power supply physically located in one of the end caps connected by tube length wires to the rest of the driver circuit, including a step-down constant current circuit in

the other end cap. *Id.* at 61–62 (citing Ex. 1007, 7:7-15; 15:6-15, 13:25–50, Figs. 1, 3).

Patent Owner does not respond to Petitioner's assertions concerning the preamble or claim limitations 1.a–1.c. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that Guang teaches the elements recited in the preamble and claim limitations 1a–1.c.

b) Limitations 1.d and 1.e

Claim limitation 1.d recites that the LED light strip is disposed on the inner surface of the light tube. Pet. v. Petitioner’s argument cites its annotated version of Figure 3 of Guang reproduced below.



Id. at 63. Petitioner describes Guang’s PCB LED light strip 20 as disposed inside lamp tube 12, where it is supported by LED holder 22 with ridges 44 that provide longitudinal strength. *Id.* at 62–63 (citing Ex. 1007, 15:44–46).

Petitioner notes that channels 45 inside tube end 16 receive and hold flanged LED array holder 22 with its ridges 44. *Id.* According to Petitioner, an ordinarily skilled artisan would have understood that, based on the arrangement of channels 45 on one lower portion of PCB housing 14 and 16, that LED array 20 supported by LED holder 22 is disposed on a circumferential surface of tube 12. *Id.* at 63 (citing Ex. 1002, Baker Decl. ¶ 72).

Patent Owner contends that “Petitioner’s theory of obviousness is flawed because, like Ground 1, it relies on an overly broad construction of the term “disposed on.” Prelim. Resp. 53–58. Patent Owner contends that “Petitioner badly wants this Board to believe that a POSA would have understood the claim term as encompassing anything disposed on the inner circumferential surface as long as that thing is ‘either directly or through intervening elements’ on the surface.” Pet. 55 (citing Pet. 16, 62-63). These arguments by Patent Owner are similar to those it unsuccessfully advanced in its response to Petitioner’s challenge based on the combination of Takahashi and Shimasaki.

Nevertheless, Patent Owner’s arguments concerning the differences between the structure Petitioner cites in Guang and the structure taught by Takahashi are important to limitation 1.d. Prelim. Resp. 54–58. Guang teaches a structure in which the LED array is disposed inside the tube, via a holder; but it is not clear how Guang teaches a structure in which the LED light strip is disposed on an inner surface of the lamp tube, either directly or indirectly, because in Guang, the ridges of the LED array holder are secured to channels in the tube end. Dr. Baker’s testimony does not sufficiently explain the basis for Petitioner’s assertion that Guang discloses the claimed feature. *See* Ex. 1002, Baker Decl. ¶ 72. For this reason, we are not

persuaded that Petitioner has demonstrated a reasonable likelihood it will succeed on its challenge to Claim 1 based on the combined teachings of Guang and Shimasaki.

c) Claims 2, 6, 9, 13–15

As claims 2, 6, 9, and 13–15 depend directly or indirectly from claim 1, we are not persuaded that Petitioner has demonstrated that Guang and Shimasaki disclose the limitations recited in these claims

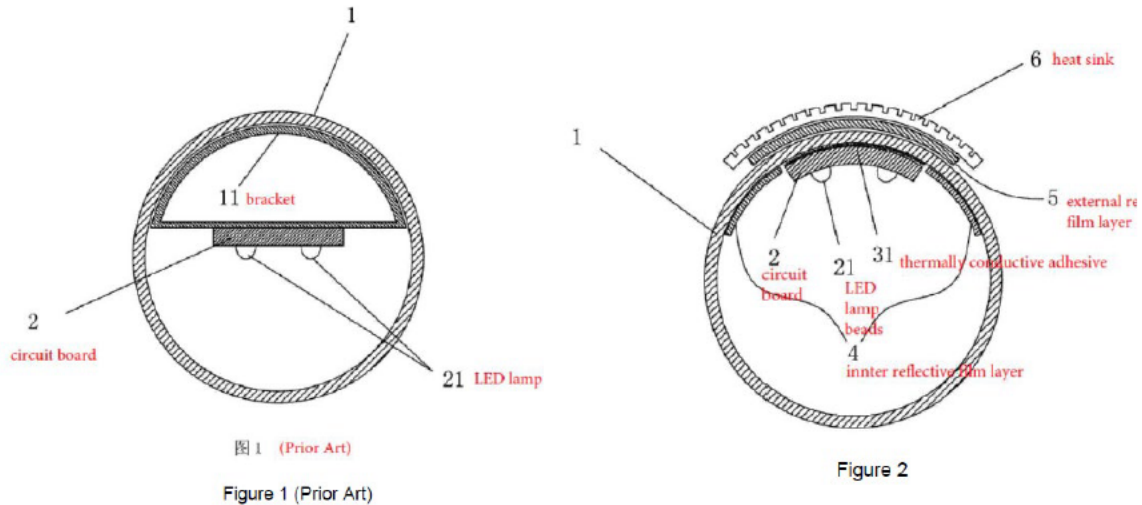
D. Petitioner’s Contentions That Claims 10 and 11 Would Have Been Obvious Over Guang, Shimasaki, and Takahashi (Ground 3)

Claim 10 depends from claim 1; claim 11 depends from claim 10. As discussed above, we are not persuaded that Petitioner has demonstrated that Guang teaches claim limitation 1.d. We address Petitioner’s challenge to claims 10 and 11 based on the combined teachings of Takahashi and Shimaskai elsewhere in this Decision and do not repeat that analysis here.

E. Petitioner’s Contentions That Claims 1, 2, 6, 9–11, and 13–15 Would Have Been Obvious Over Takahashi, Shimasaki, and Jing (Ground 4)

1. Jing

Jing discloses an LED fluorescent lamp. Ex. 1015, 4. Petitioner’s annotated version of Figures 1 and 2 of Jing are reproduced below, with annotated Figure 1 on the left and annotated Figure 2 on the right.



Id. at 9. Figure 1 of Jing illustrates an earlier version of a fluorescent LED in which circuit board 2 with LED lamps beads 21 is attached to bracket 11. *Id.* ¶ 3. Bracket 11, which extends from one end to the other end of tube 1, has a cross section shaped like an arch, with the arc of the arch connected with the inner wall of lamp tube 1 and the chord portion facing the center of tube 1. *Id.* ¶ 4. Bracket 11 helps to draw heat from LED lamp beads 21 through circuit board 2 to the glass walls of tube 1 and into space. *Id.* ¶ 5.

Jing reduces manufacturing costs by replacing bracket 11 with a thermally conductive adhesive layer 31 e.g., a layer of silicone or epoxy resin, that affixes circuit board 2 to the inner wall of tube 1. *Id.* ¶¶ 8–11, 27–29. Circuit board 2 is made of aluminum based printed circuit board (PCB) or glass fiber PCB that can be made into an arc shape. *Id.* ¶¶ 27–28. Figure 2 also shows inner reflective film layer 4, that can be continuous or discontinuous, external reflective layer 5 and heat sink 6. *Id.* Fig. 2; ¶¶ 32–37. Jing also includes a plug with a driver circuit connected to an external power supply at the end of the tube. *Id.* ¶ 27, Fig. 6. The inner wall of tube 1 can have a smooth or rough surface. *Id.* ¶ 27.

2. *Claim 1*

Petitioner cites Takahashi and Shimasaki as discussed above. As to claim limitation 1.d, Petitioner cites Jing as disclosing a more direct attachment of the LED light strip to the inner surface of the lamp tube, e.g. by an adhesive. Pet. 82.

The Jing reference is a translation of reference that is originally in Japanese. Patent Owner identifies informalities in the translator's certificate concerning the name of the translation company and the absence of an affidavit or declaration under 37 C. F. R. §42.2 in compliance with 37 C. F. R. §1.68. Prelim. Resp. 64 (citing Ex. 1015, 12). Patent Owner does not suggest that the translation is inaccurate, and the translated text appears to be consistent with the drawings and figures. Although Petitioner will need to submit a proper translator's certificate, the substance of the translation is sufficient for purposes of institution.

Patent Owner also argues that the addition of Jing does not cure the lack of motivation to combine Takahashi and Shimasaki. Prelim Resp. 65. As discussed above, we are persuaded that, for purposes of institution, Petitioner has demonstrated a person of ordinary skill would have had reason to combine the teachings of the references. Patent Owner also argues that an ordinarily skilled artisan would not have had reason to combine the teachings of Jing with those of Takahashi and Shimasaki because Petitioner has not addressed curvature of the tube. *Id.* at 65–68. At this stage this argument is unavailing. As Petitioner notes (*see* Pet. 83–84), Jing discloses circuit board 2 is made of aluminum based printed circuit board (PCB) or glass fiber PCB that made into an arc shape and the use of thermally conductive adhesive. *Id.* ¶¶ 27–28. In addition, Patent Owner asserts that a person of ordinary skill would not have attempted to adhere a flat PCB to a

curved tube, as this would require additional adhesive and deteriorate thermal performance (Prelim. Resp. 67–68), but Patent Owner identifies no evidence to support its assertions. *See In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (explaining that attorney arguments that are unsupported by factual evidence are entitled to little probative value). At trial, with the benefit of a full record, we will evaluate any established disadvantages and their impacts on an ordinarily skilled artisan’s motivation.

Based on the current record, we are persuaded that Petitioner has demonstrated a person of ordinary skill would have had reason to combine the teachings of Jing with those of Takahashi and Shimasaki and that in combination references teach all the limitations of claim 1.

3. *Claims 2, 6, 9–11, and 13–15*

We discuss the combined teaching of Takahashi and Shimasaki concerning claims 2, 6, 9–11, and 13–15 in Section X.B.5–12 above. For reasons similar to those provided above, we are persuaded that Petitioner has demonstrated a person of ordinary skill would have had reason to combine the teachings of Jing with those of Takahashi and Shimasaki and that in combination the references teach all the limitations of claims 2, 6, 9–11, and 13–15.

F. Petitioner’s Contentions That Claims 1, 2, 6, 9–11, and 13–15 Would Have Been Obvious Over Guang, Shimasaki, and Jing (Ground 5)

1. *Claim 1*

For the reasons discussed above, we are not persuaded that Petitioner has demonstrated Guang teaches claim limitation 1.d. *See* Section X.C.2 herein. Nevertheless, we agree with Petitioner that Jing teaches limitation 1.d. *See* Section X.E herein. Turning to claim limitation 1.e, as we noted in

our discussion of the combination with Takahashi, Petitioner cites Shimasaki as disclosing a high reflectance white resist layer laminated over substantially the entire surface of the front layer of substrate 61, excluding the mounting region of the light emitting elements and the solder lands. See Section X.B.4.b herein; *see also* Pet. 43–44 (citing Ex. 1006, 4:40–52). *See also*, Ex. 1002, Baker Decl. ¶ 63. We also find persuasive Petitioner’s argument that a person of ordinary skill would understand that Shimasaki’s resist layer would benefit Guang’s LED array 20 by protecting the wiring from corrosion and damage and that openings in the resist layer would be needed to connect electrical components to LED light strip. Pet. 54. We also agree that Petitioner has sufficiently demonstrated a person of ordinary skill would have reason to combine the teachings of Jing and those of Shimasaki for reasons similar to those discussed above discussion of the combination with Takahashi. *See* Section X.E.

Based on the current record, we are persuaded that Petitioner has demonstrated a person of ordinary skill would have had reason to combine the teachings of Jing with those of Guang, Shimasaki and Jing and that, in combination, the references teach all the limitations of claim 1.

2. *Claims 2, 6, 9–11, and 13–15*

Petitioner cites combined teachings of Guang and Shimasaki as disclosing the limitations recited in claims 2, 6, 9–11, and 13–15. As to claim 2, noting that Guang explicitly discloses a 4-pin connector, Petitioner argues that Shimasaki renders obvious four adjacent openings for soldering pads, which necessarily includes a third opening adjacent to the first two openings. Pet.65 (citing Ex. 1007, 8:45–56; Ex. 1006, 4:40–52; Ex. 1002, Baker Decl. ¶¶ 43, 79).

As to claim 6, Petitioner cites Guang as disclosing LED light strip 20 having a plurality of LED light sources disposed on a first side of the LED array. Pet. 66–67 (citing Ex. 1007, 8:17–67, Figs. 1, 2). Petitioner acknowledges that Guang does not explicitly describe the wiring layer for the LEDs but states that an ordinarily skilled artisan would have understood the LED light sources are connected to a wiring layer based on Guang’s use of the known structure, for example as shown by Shimasaki. *Id.* at 67–68 (citing Ex. 1002 ¶¶ 81, 82; Ex. 1007, 8:45–49; 1006, 4:40–52, 5:7–13).

As to claim 9, Petitioner cites Guang as disclosing electrode pins 30, 32, 34, and 36 electrically connected to the power supply. *Id.* at 69 (citing, e.g., Ex. 1007, 8:28–45, Fig. 4). Petitioner also cites cap sections 7 and power supply terminals 71 in Shimasaki. *Id.* at 70 (citing Ex. 1006, 3:47–50, 11:4–12, Fig. 16; Ex. 1002, Baker Decl. ¶ 61).

As to claim 13, to the extent that Patent Owner contends that the LED light strip disposed on an inner circumferential surface of the lamp tube requires a more direct attachment of the LED light strip to the inner surface of the lamp, Petitioner cites Jing as disclosing this feature. Pet. 85, *see also id.* at 82–84.

As to claim 14, Petitioner cites Guang as teaching a rectifier and filter circuit PCB 18 and step-down constant current PCB 19 disposed in an end cap and connected to the connecting region. Pet. 71 (citing Ex. 1007, 8:16–27, 13:25–50, 7:7–15, 15:6–15, Figs. 1, 3).

As to claim 15, Petitioner cites Figure 3 of Guang as illustrating the PCBs 18, 19 are oriented so that their longer sides are parallel to the longitudinal direction of the lamp tube. *Id.* at 72.

Patent Owner does not separately respond to Petitioner’s assertions concerning claims 2, 6, 9–11, and 13–15 under this ground. We are

persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Guang, Shimasaki, and Jing that in combination they teach the elements recited in claim 2, 6, 9–11, and 13–15.

G. Petitioner’s Contentions That Claims 10 and 11 Would Have Been Obvious Over Guang, Shimasaki, Takahashi, and Jing (Ground 6)

Petitioner contends that an ordinarily skilled artisan would have had reason to combine the teachings of Guang and Shimasaki with the diffusion film taught by Takahashi because a person of ordinary skill would recognize that a diffusion film could be applied to the surface of the lamp tube of an LED tube lamp. Pet. 73 (citing Ex. 1002, Baker Decl. ¶¶ 31, 32, 83, 84). Petitioner notes that Guang teaches LED tube lights are available with frosted or diffusing lens styles and are translucent. *Id.* at 74 (citing Exhibit 1007, 4: 29–31, 15:55). Based on these disclosures, Petitioner contends that a person of ordinary skill would have combined the teachings of these references, and that in combination they teach the limitations recited in claims 10 and 11.

Patent Owner does not respond to Petitioner’s assertions concerning claims 10 and 11 under this ground. We are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Guang, Shimasaki, Takahashi, and Jing and that, in combination, they teach the elements recited in claims 10 and 11.

H. Petitioner's Contentions That Claims 2, 29–34, 36, and 39–41 Would Have Been Obvious Over Takahashi, Shimasaki, Takigami (Ground 7)

Takigami relates to a printed circuit board (PCB) including a mark used as a recognition of origin that enables proper mounting of devices on the printed circuit board and includes a land partially coated with a resist and a land which is not coated with the resist. Ex. 1008, 1:5–12. Noting Takigami's explanation that mounting errors may occur if a resist is applied over areas of the PCD where devices are to be mounted, Petitioner cites Takigami as disclosing a technique for overcoming such errors using marks. Pet. 86. Petitioner cites Takigami as teaching a printed circuit board that includes first mark 2 formed by a thin conductor, second mark 3 formed by resist 8, land 6, which is partially coated by resist 8, and land 7, which is not coated by resist 8. *Id.* at 86–87 (citing Ex. 1008 (code 57)). Referencing Figure 1, Petitioner cites Takigami's teaching that "outside of the first mark 2 made of the thin conductor, the resist 8 is coated on an area sufficiently apart from a circumference of the first mark 2 so as to avoid the first mark 2 with an extremely sufficient clearance." *Id.* at 87 (citing Ex. 1008, 3:55–59). Petitioner further notes that Takigami teaches second mark 3 made of resist 8 is coated on a central area of first mark 2, while enough of a gap is assured between the central area and the circumference of first mark 2, such that the gaps form an opening in the resist around second mark 3. *Id.* at 87–88 (citing Ex. 1008, 3:45–51, Fig. 1; Ex. 1002, Baker Decl. ¶ 96). Petitioner also notes that Takigami teaches second mark 3 can be formed completely apart from first mark 2. *Id.* (citing Ex. 1008, 5:1–5).

Petitioner asserts that a person of ordinary skill would have recognized that Takigami's reference mark enables the proper mounting of

devices on printed circuit boards and would have had reason to modify the combined teachings of the references previously discussed. According to Petitioner, a person of ordinary skill would have understood that positioning a recognizing mark in alignment with LED light source lands and adjacent to solder pads on an end of the LED strip would enable the recognizing mark to be used as an origin/reference such that a mounting device would only need to move in a single dimension or direction to place or mount each of the LED light sources, thereby simplifying manufacturing. *Id.* at 90 (citing Ex. 1002, Baker Decl. ¶¶ 100, 105).

We are persuaded that, for purposes of this decision, Petitioner has described sufficient reasons a person of ordinary skill would have incorporated teachings of Takigami into each of the other combinations of references to produce LED tube devices that are the subject of this proceeding.

The challenge Petitioner identifies as ground 7 parallels its challenge under ground 1, with the addition of Takigami and claims 29–34, 36, and 39–41. As to claim 2, Petitioner cites its discussion of claim 1 in its challenge under ground 1 and cites Takagami as disclosing coating a PCB with (solder), resist 8 (protective layer), and leaving openings in the resist. Pet. 91–92. Petitioner cites Takagami as further disclosing the resist is coated on an area sufficiently apart from the circumference of first mark 2 (a recognizing mark) so as to avoid first mark 2, which is a recognizing mark because it provides orientation for devices 4 and 5. *Id.* at 91–92 (citing Ex. 1008, 3:11–59, Fig. 1).

As to claim 29, Petitioner cites its discussion of limitations 1.p–1.e under challenge ground 1 as evidence the references disclose claim limitations 29.p–29.f, and 29.h. *Id.* at 92. Claim limitation 29.g recites a

recognizing mark arranged on the connecting region. Noting that Figure 4 of Takahashi teaches an LED light strip having a mounting region and a connecting region, where a plurality of LED light sources are mounted on the mounting region and at least two solder pads are arranged on the connecting region, Petitioner cites Takagami as disclosing using a recognizing mark in the connecting region to simplify the procedure of mounting the LED light sources in a row. *Id.* at 94–95.

As to claim 30, which recites a third opening, Petitioner cites its discussion of claim limitation 1.e in other grounds. *Id.* at 97. As to claim 31, Petitioner cites its discussion of claim 2 and claim limitation 29.g. *Id.* As to claim 32, Petitioner cites its discussions of claim 13 in other grounds. *Id.* As to claim 33, Petitioner cites its discussions of claim 14 in other grounds. *Id.* As to claim 34, Petitioner cites its discussions of claim 15 in other grounds. *Id.* As to claim 36, Petitioner cites its discussions of claim 6 in other grounds. *Id.* at 98. As to claim 39, Petitioner cites its discussions of claim 9 in other grounds. *Id.* As to claim 40, Petitioner cites its discussions of claim 10 in other grounds. *Id.* As to claim 41, Petitioner cites its discussions of claim 11 in other grounds. *Id.*

Patent Owner argues only that Takagami does not provide disclosure that is missing in the other references. Prelim. Resp. 68.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi, Shimasaki, and Takigami and that in combination they teach the limitations of claims 2, 29–34, 36, and 39–41.

I. Petitioner's Contentions That Claims 2, 29–34, 36, and 39 Would Have Been Obvious Over Guang, Shimasaki, and Takigami (Ground 8)

Challenge ground 8 generally parallels challenge ground 2 combined with the addition teachings of Takigami. For the reasons articulated in our discussion of ground 2, we were not persuaded that Petitioner has demonstrated Guang discloses claim limitation 1.d, i.e., that the light strip is disposed on a circumferential surface of the tube. Claim 2 depends from claim 1. Takigami does not include disclosure lacking in Guang as to claim 2.

Independent claim 29 is different from claim 1 because claim 29 recites that the light strip is disposed inside the tube. Ex. 1001 102:1–2. As we noted in our discussion of challenge ground 2, we agree that Guang shows the light strip disposed inside the tube. We also agree that Guang and Shimasaki disclose the other limitations recited in independent claim 29. *See, e.g.*, Section X.F herein. In addition, Petitioner has sufficiently shown that an ordinary artisan would have been motivated to combine Guang, Shimasaki, and Takigami. We are therefore persuaded that Petitioner has demonstrated the combination of Guang, Shimasaki and Takigami disclose the limitations of claim 29.

We are also persuaded that Petitioner has sufficiently demonstrated for purposes of institution that this combination of references discloses the limitations recited in dependent claim 30–34, 36 and 39.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings

of Guang, Shimasaki, and Takigami and that in combination they teach the limitations of claims 29–34, 36, and 39.

J. Petitioner’s Contentions That Claims 40 and 41 Would Have Been Obvious Over Guang, Shimasaki, Takahashi, and Takigami (Ground 9)

Challenge ground 9 generally parallels challenge ground 3 combined with the additional teachings of Takagami.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Guang, Shimasaki, Takahashi, and Takigami and that in combination they teach the limitations of claims 40 and 41.

K. Petitioner’s Contentions That Claims 2, 29–34, 36, and 39– 41 Would Have Been Obvious Over Takahashi, Shimasaki, Jing and Takigami (Ground 10)

Challenge ground 10 generally parallels challenge ground 4 combined with the additional teachings of Takagami.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Takahashi, Shimasaki, Jing, and Takigami and that in combination they teach the limitations of claims 2, 29–34, 36, and 39–41.

L. Petitioner’s Contention That Claims 2, 29–34, 36, and 39 Would Have Been Obvious Over Guang, Shimasaki, Jing, Takagami (Ground 11)

Challenge ground 11 generally parallels challenge ground 5 combined with the addition teachings of Takagami.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a

person of ordinary skill would have been motivated to combine the teachings of Guang, Shimasaki, Jing, and Takigami and that in combination they teach the limitations of claims 2, 29–34, 36, and 39.

M. Petitioner’s Contentions That Claims 40 and 41 Would Have Been Obvious Over Guang, Shimasaki, Takahashi, Jing, and Takigami (Ground 12)

Challenge ground 12 generally parallels challenge ground 6 combined with the addition teachings of Takagami.

Based on the current record, we are persuaded for purposes of this Decision that Petitioner has cited sufficient evidence to demonstrate that a person of ordinary skill would have been motivated to combine the teachings of Guang, Shimasaki, Takahashi, and Takigami and that in combination they teach the limitations of claims 40 and 41.

XI. CONCLUSION

For the reasons discussed above, we are persuaded that Petitioner has demonstrated a reasonable likelihood that it will succeed on the following challenges to patentability:

Claims 1, 2, 6, 9–11, and 13–15 as obvious over Takahashi and Shimasaki;

Claims 10 and 11 as obvious over Guang, Shimasaki, and Takahashi;
Claims 1, 2, 6, 9–11, and 13–15 as obvious over Takahashi, Shimasaki, and Jing;

Claims 1, 2, 6, 9–11, and 13–15 as obvious over Guang, Shimasaki, and Jing;

Claims 10 and 11 as obvious over Guang, Shimasaki, Takahashi, and Jing;

Claims 2, 29–34, 36, and 39–41 as obvious over Takahashi, Shimasaki, and Takigami;

Claims 29–34, 36, and 39 as obvious over Guang, Shimasaki, and Takigami;

Claims 40 and 41 as obvious over Guang, Shimasaki, Takahashi, and Takigami;

Claims 2, 29–34, 36, and 39–41 as obvious over Takahashi, Shimasaki, Jing and Takigami;;

Claims 2, 29–34, 36, and 39 as obvious over Guang, Shimasaki, Jing, Takagami; and

Claims 40 and 41 as obvious over Guang, Shimasaki, Takahashi, Jing, and Takigami.

The factual findings and conclusions of law in this Decision are preliminary and based on the current record. They are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Our final decision as to the patentability of challenged claims will be based on the full record developed during trial, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in such a response may be deemed waived.

XII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a) an *inter partes* review of the '125 patent is hereby instituted, commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

FURTHER ORDERED that the trial is authorized on all grounds set forth in the Petition; and

FURTHER ORDERED that the trial will be conducted in accordance with a corresponding separately issued Scheduling Order.

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Patent 10,295,125 B2

FOR PETITIONER:

Eagle H. Robinson
Catherine J. Garza
William Allan Braxdale
Michael T. Mudrow
NORTON ROSE FULBRIGHT US LLP
eagle.robinson@nortonrosefulbright.com
cat.garza@nortonrosefulbright.com
allan.braxdale@nortonrosefulbright.com
mike.mudrow@nortonrosefulbright.com

FOR PATENT OWNER:

Patrick J. McKeever
Miguel Bombach
Evan Day
Han-Wei Chen
PERKINS COIE LLP
mckeever-ptab@perkinscoie.com
bombach-ptab@perkinscoie.com
day-ptab@perkinscoie.com
chen-ptab@perkinscoie.com