

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LUMINEX INTERNATIONAL CO., LTD.,
Petitioner,

v.

SIGNIFY HOLDINGS B.V.,
Patent Owner.

IPR2024-00101
Patent 10,299,336 B2

Before CHRISTOPHER M. KAISER, KEVIN C. TROCK, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

Luminex International Co., Ltd. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–20 in U.S. Patent No. 10,299,336 B2 (Exhibit 1001, “the ’336 patent”) under 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”). Signify Holdings B.V. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Further, after receiving Board authorization to address certain issues, Petitioner filed a Preliminary Reply, and Patent Owner filed a Preliminary Sur-reply. *See* Paper 7 (Order); Paper 8 (“Prelim. Reply”); Paper 9 (“Prelim. Sur-reply”).

Under 37 C.F.R. § 42.4(a), we have authority to determine whether to institute an *inter partes* review. We may institute an *inter partes* review only if “the information presented in the petition filed under section 311 and any response filed under section 313 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). The “reasonable likelihood” standard is “a higher standard than mere notice pleading” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Based on the current record and for the reasons explained below, Petitioner has shown that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Thus, we institute an *inter partes* review of claims 1–20 in the ’336 patent on all challenges included in the Petition.

II. BACKGROUND

A. Identified Real Parties in Interest

Petitioner identifies itself as the sole real party in interest. Pet. 89.
Patent Owner identifies itself as the sole real party in interest. Paper 4, 2.

B. Related Matters

Petitioner and Patent Owner identify the following civil action as a related matter involving the '336 patent: *Signify North America Corp. et al. v. Menard, Inc.*, No. 3:22-cv-00706 (W.D. Wis. filed Aug. 12, 2022) (the “Wisconsin case”). Pet. 90; Paper 4, 2; Prelim. Resp. 5–6; *see* Ex. 2003 (Complaint for Patent Infringement filed Aug. 12, 2022).

C. Procedural History

In the Preliminary Response and the Preliminary Sur-reply, Patent Owner argued that the Board should deny institution based on:

- (1) *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”) in view of the Wisconsin case;
- (2) § 315(a) because (i) Petitioner filed a crossclaim in the Wisconsin case seeking a declaratory judgment of invalidity for the '336 patent, (ii) Petitioner’s crossclaim constitutes a “civil action challenging [patent] validity” under § 315(a), and (iii) § 315(a) bars institution; and
- (3) § 315(b) because (i) Petitioner filed the Petition in October 2023 more than one year after Patent Owner served Menard, Inc. (“Menard”) with a complaint for patent infringement in August 2022, (ii) Menard is “at least one of” a real party in interest and a privy of Petitioner under § 315(b), and (iii) § 315(b) bars institution.

Prelim. Resp. 9–34; Prelim. Sur-reply 1–7; *see* 35 U.S.C. § 315(a)–(b). Petitioner disagreed that the Board should deny institution on any of the above-identified bases. *See* Pet. 3–5; Prelim. Reply 1–7.

On May 9, 2024, the panel issued a decision denying institution based on § 315(b) because the panel determined that Menard is a real party in interest in this proceeding and Petitioner filed the Petition more than one year after the date on which Menard was served with a complaint alleging infringement of the '336 patent. *See* Paper 10, 35–42; 35 U.S.C. § 315(b). The panel did not reach the following issues: (1) whether to exercise discretion under § 314(a) to deny institution in view of the Wisconsin case; (2) whether Petitioner's crossclaim seeking a declaratory judgment of invalidity for the '336 patent constitutes a “civil action challenging [patent] validity” under § 315(a); (3) whether Menard is a privy of Petitioner under § 315(b); and (4) whether Petitioner demonstrates a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. *See* Paper 10, 23, 42–43.

On June 6, 2024, Petitioner requested Director review of the panel's decision denying institution. *See* Paper 11. Among other things, Petitioner asserted that the panel erred in determining that Menard is a real party in interest in this proceeding. *See id.* at 4–15.

On August 20, 2024, the Director granted Petitioner's request and vacated the panel's decision denying institution. Paper 12, 6. In doing so, the Director determined that Menard is not a real party in interest or a privy of Petitioner under § 315(b) and that § 315(b) does not bar institution. *Id.* at 5. The Director also determined that § 315(a) “does not apply to the ‘cross-claims’ asserted by Petitioner” and that § 315(a) does not bar

institution. *Id.* Additionally, the Director declined to exercise discretion under § 314(a) to deny institution in view of the Wisconsin case because Petitioner submitted a *Sotera* stipulation. *Id.*; see Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022)¹ at 3, 7–8 (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A)).

Further, the Director remanded the case to the panel and instructed the panel “to determine whether the Petition presents a reasonable likelihood of prevailing with respect to at least one of the challenged claims under 35 U.S.C. § 314(a), and to determine whether to institute *inter partes* review accordingly.” Paper 12, 5–6. As noted above and explained in the patentability analysis below, we determine that there is a reasonable likelihood Petitioner would prevail with respect to at least one of the challenged claims. *See supra* § I; *infra* §§ III.E–III.H.

D. The '336 Patent (Exhibit 1001)

The '336 patent, titled “Configurable Lighting System,” issued on May 21, 2019, from an application filed on June 21, 2018. Ex. 1001, codes (22), (45), (54). The patent identifies that application as a continuation-in-part of an application filed on November 13, 2017 (later issued as U.S. Patent No. 10,299,335 B2 (Exhibit 1023)), that was a continuation of an application filed on February 16, 2017 (later issued as U.S. Patent No. 9,820,350 B2). *Id.* at 1:6–11, code (63). The '336 patent states that “the

¹ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

technology relate[s] generally to lighting systems and more specifically to lighting systems that can be readily configured to produce illumination of different color temperatures.” *Id.* at 1:19–22.

The ’336 patent explains that luminaires incorporating incandescent or fluorescent technology provide some flexibility to meet user preferences through lamp selection “in terms of correlated color temperature (CCT or color temperature) and light output (lumen output).” Ex. 1001, 1:31–36. The patent also explains that “light emitting diodes (LEDs) offer substantial potential benefit associated with their energy efficiency, light quality, and compact size.” *Id.* at 1:26–28.

According to the ’336 patent, however, “conventional light-emitting-diode-based luminaires typically offer reduced flexibility when the luminaire’s light-emitting-diode-based light source is permanently attached to the luminaire.” Ex. 1001, 1:42–45. For instance, “[s]tocking conventional light-emitting-diode-based luminaires at distribution to accommodate multiple configurations that users may desire can entail maintaining a relatively large or cumbersome inventory.” *Id.* at 1:45–49.

The ’336 patent identifies a need for a light-emitting-diode system “that can adapt to various applications, for example by delivering multiple color temperatures, multiple lumens, and/or multiple photometric distributions” so that “a single luminaire [may] be stocked at distribution and then quickly configured according to application parameters and deployment dictates.” Ex. 1001, 1:50–57. The ’336 patent endeavors to address that need by providing a luminaire including a housing, an electrical cable, and a switch coupled to the electrical cable with the switch “disposed remotely from the housing” and having “multiple positions” such that “each position

of the switch corresponds to a discrete correlated color temperature (CCT) output by one or more light sources of the luminaire.” *Id.* at code (57).

The '336 patent's Figure 8 (reproduced below) depicts a luminaire “currently known in the art”:

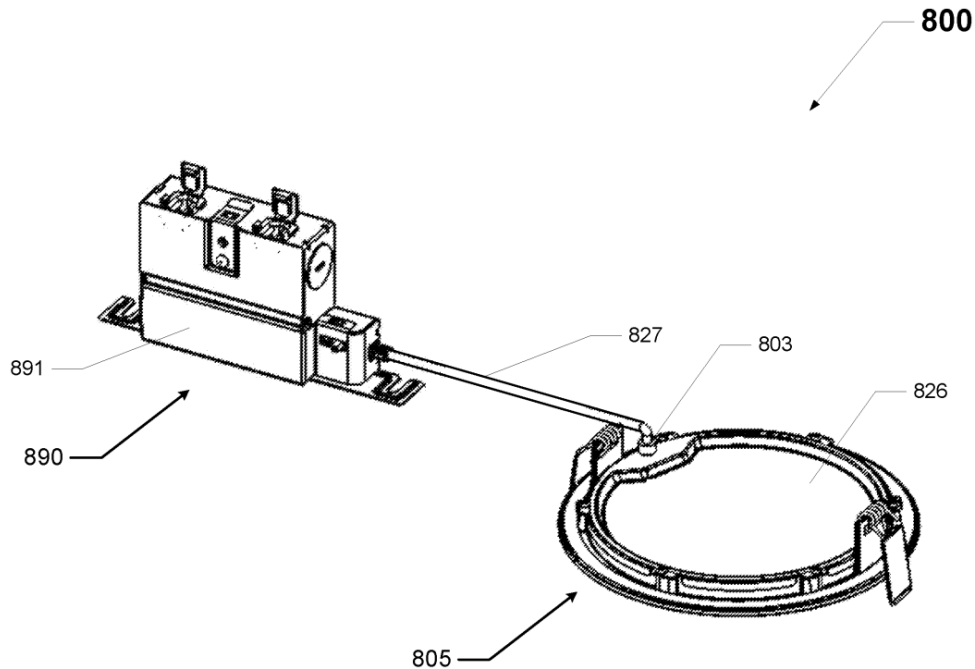


FIG. 8
(PRIOR ART)

Figure 8 illustrates “currently known” luminaire 800 with the following components:

- low-profile housing 805 having wiring aperture 803 in cover 826;
- electrical cable 827 extending through wiring aperture 803 in cover 826 and including “one or more electrical conductors to transfer power, control, communication, data, and/or any other type of electrical signals”; and

- junction box 890 located remotely from housing 805 and including “one or more walls 891 to enclose one or more electrical components (e.g., a driver).”

Ex. 1001, 3:24–25, 10:66–11:9, Fig. 8. The “electrical cable 827 electrically couples one or more electrical components in the junction box 890 with one or more electrical components in or on the housing 805,” such as light sources. *Id.* at 11:9–12, 11:17–20, Fig. 8.

The '336 patent's Figure 9B (reproduced below) depicts a luminaire with a switch according to "certain example embodiments":

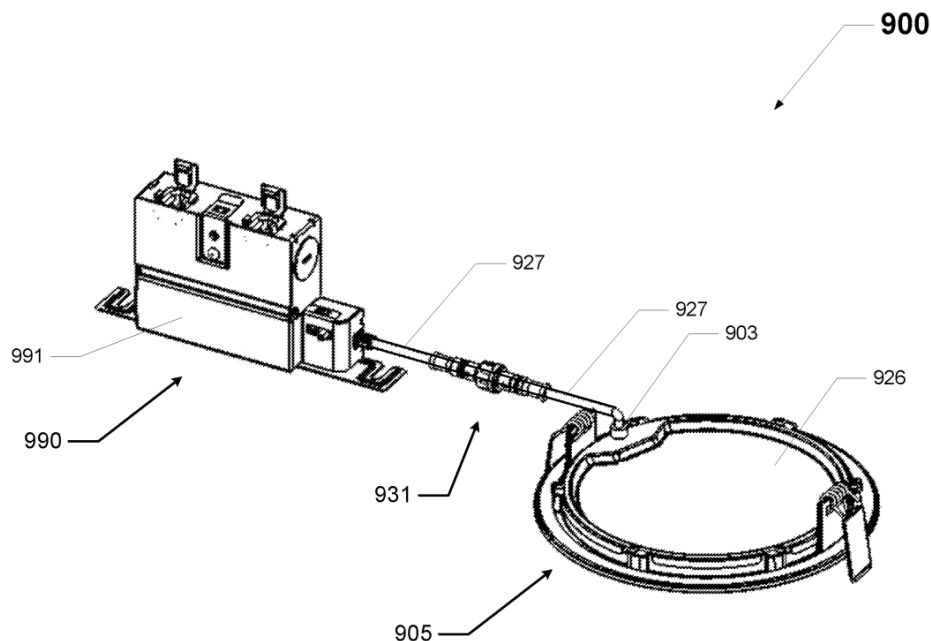


FIG. 9B

Figure 9B illustrates luminaire 900 with the following components:

- low-profile housing 905 having wiring aperture 903 in cover 926;
- electrical cable 927 extending through wiring aperture 903 in cover 926 and including “one or more electrical conductors to transfer power, control,

communication, data, and/or any other type of electrical signals”;

- switch 931 located “outside of the housing 905” and “in-line with the electrical cable 927”; and
- junction box 990 located remotely from housing 905 and including “one or more walls 991 to enclose one or more electrical components (e.g., a driver).”

Ex. 1001, 3:26–27, 11:30–38, 11:44–47, 11:63–66, 12:21–23, Fig. 9B.

Luminaire 900 in Figure 9B “is substantially the same as” luminaire 800 in Figure 8 except that luminaire 900 “includes the example switch 931.” *Id.* at 11:25–29.

Housing 905 of luminaire 900 “can be installed in or on any of a number of structure members (e.g., drywall that forms a ceiling, a ceiling tile)” with junction box 990 “located behind the ceiling.” Ex. 1001, 11:42–45. When housing 905 “is mounted in its installed location (e.g., the ceiling), the entire electrical cable 927 (and so also the switch 931) is behind the structure member (e.g., ceiling) and is inaccessible.” *Id.* at 11:51–56. When housing 905 “is removed from its installed location, the junction box 990 and the electrical cable 927 (and so also the switch 931) can be accessible.” *Id.* at 11:58–60.

Switch 931 “can have one or more coupling features (e.g., terminal points) that are used to couple to one or more electrical conductors of one or more electrical cables 927.” Ex. 1001, 11:67–12:3. Switch 931 “can have an actuator having multiple positions” and “a range of selections that are either continuous or discrete.” *Id.* at 12:3–5, 12:16–17.

As examples of switch 931, the ’336 patent discloses a wide variety of devices as follows:

an inline pin switch, multiple DIP [dual inline pin] switches, one or more single in-line pin packages (SIP or SIPP), one or more rocker switches, one or more reed switches, one or more magnetic switches, one or more rotary switches, one or more rotary dials, one or more selectors or selector switches, one or more slide switches, one or more snap switches, one or more thumbwheels, one or more toggles or toggle switches, one or more keys or keypads, or one or more buttons or pushbuttons.

Ex. 1001, 12:6–15.

The '336 patent's Figure 10 (reproduced below) depicts a luminaire with a switch according to “certain example embodiments”:

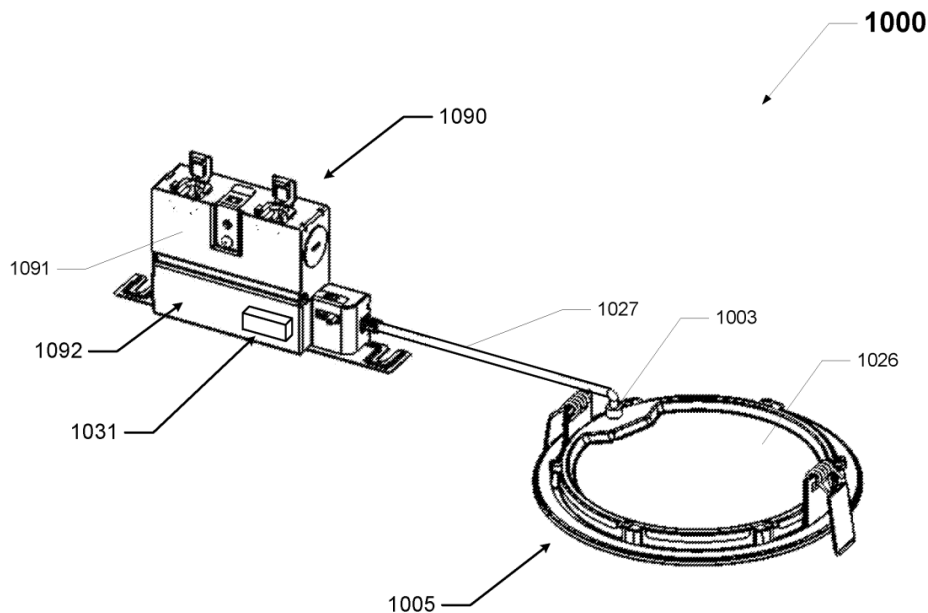


FIG. 10

Figure 10 illustrates luminaire 1000 with the following components:

- low-profile housing 1005 having wiring aperture 1003 in cover 1026;
- electrical cable 1027 extending through wiring aperture 1003 in cover 1026 and including “one or more electrical conductors to transfer power, control,

communication, data, and/or any other type of electrical signals”;

- switch 1031; and
- junction box 1090 located remotely from housing 1005 and including “one or more walls 1091” that form cavity 1092 “to enclose one or more electrical components (e.g., a driver, the switch 1031).”

Ex. 1001, 3:28–29, 12:40–49, 12:56–61, Fig. 10. In Figure 10, “one of the walls of the junction box 1090 is removed to show the switch 1031 disposed within the cavity 1092 formed by the walls 1091 of the junction box 1090.”

Id. at 12:58–61, Fig. 10. Luminaire 1000 in Figure 10 “is substantially the same as” luminaire 900 in Figure 9 except that switch 1031 in luminaire 1000 “is in a different location separate from the housing 1005.”

Id. at 12:35–39.

As alternatives to the arrangement shown in Figure 10, “rather than being disposed within the cavity 1092 of the junction box 1090, the switch 1031 can be disposed on a wall 1091 of the junction box 1090 or remotely from the junction box 1090 as well as remotely from the housing 1005 of the luminaire 1000.” Ex. 1001, 13:13–19.

The ’336 patent explains that a luminaire “can comprise a 3,000 K group of light emitting diodes and a 4,000 K group of light emitting diodes.”² Ex. 1001, 3:57–59. If so, the luminaire can deliver (1) 3,000 K illumination when “only the 3,000 K group is on,” (2) 4,000 K illumination when “only the 4,000 K group is on,” and (3) 3,500 K illumination when “the 3,000 K group and the 4,000 K group are both on.” *Id.* at 3:59–63.

² “K represents Kelvin which is a measure of temperature similar to Fahrenheit and Celsius.” Ex. 1004 ¶ 32.

Further, if “the 4,000 K group of light emitting diodes is concurrently operated at a low lumen output and the 3,000 K group is operated at a high lumen output, the luminaire may deliver illumination of another selected color temperature, for example 3,100 K.” *Id.* at 3:63–67.

E. The Challenged Claims

The ’336 patent includes 20 claims as follows:

- independent claim 1 for a “luminaire”;
- claims 2–12 that depend directly or indirectly from claim 1;
- independent claim 13 for a “switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire”; and
- claims 14–20 that depend directly or indirectly from claim 13.

Ex. 1001, 14:31–16:27. Petitioner challenges all 20 claims in the ’336 patent. Pet. 15–89.

Claims 1 and 13 exemplify the challenged claims and read as follows (with formatting added for clarity and with bracketed numbers and letters added for reference purposes):³

1. A luminaire comprising:
 - [1a] a housing comprising at least one outer surface that forms a first cavity;
 - [1b] at least one electrical component disposed, at least in part, within the first cavity;
 - [1c] an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component; and

³ We use the same numbers and letters that Petitioner uses to identify the claim language. *See* Pet. 23–30, 40–45.

[1d] a switch coupled to the electrical cable, wherein the switch is disposed remotely from the housing,

[1e] wherein the switch has a plurality of positions, wherein each position of the plurality of positions of the switch corresponds to a discrete correlated color temperature (CCT) output by one or more light sources of the luminaire.

13. A switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire, the switch comprising:

[13a] a body;

[13b] at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire; and

[13c] an actuator disposed on the body, wherein the actuator has a range of positions,

[13d] wherein each position of the range of positions of the actuator corresponds to a CCT of the light emitted by the luminaire.

Ex. 1001, 14:31–45, 15:21–16:5.

F. The Asserted References

For its challenges, Petitioner relies on the following references:

Name	Reference	Exhibit
Chaimberg	US 10,234,091 B1, issued March 19, 2019 (based on an application filed April 27, 2018)	1003
Roberge	US 7,178,941 B2, issued February 20, 2007 (based on an application filed May 5, 2004)	1011
Halliwell	US 9,801,250 B1, issued October 24, 2017 (based on an application filed September 23, 2016)	1012
Reiff	US 7,192,160 B2, issued March 20, 2007 (based on an application filed July 12, 2004)	1013

Pet. 15–89. Petitioner asserts that each reference qualifies as prior art “under at least 35 U.S.C. § 102(a)(2).” *Id.* at 16, 47, 60, 82; *see* 35 U.S.C. § 102(a)(2) (2018).⁴

At this stage of the proceeding, Patent Owner does not dispute that each reference qualifies as prior art. *See, e.g.*, Prelim. Resp. 9–34.

G. The Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 3, 6–9, 11–13, 15, 17–19	102 or 103	Chaimberg
2, 4, 5, 10, 14, 16, 20	103	Chaimberg, Roberge
1, 2–5, 7, 9–13, 15, 16, 19, 20	102 or 103	Halliwel
13, 15	102 or 103	Reiff

Pet. 15–89.

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 102 and § 103 effective March 16, 2013. Petitioner contends that the challenged claims are “entitled to a priority date no earlier than” the June 21, 2018, filing date for the continuation-in-part application that issued as the ’336 patent. *See* Pet. 16, 18–23, 60. Patent Owner bears the burden of establishing the benefit of priority based on an earlier filed application. *See, e.g., In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1376 (Fed. Cir. 2016); *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1380 (Fed. Cir. 2015). At this stage of the proceeding, Patent Owner does not contend that the challenged claims are entitled to a priority date earlier than June 21, 2018. *See, e.g.*, Prelim. Resp. 9–34. Thus, this decision refers to the post-AIA versions of § 102 and § 103. But our analysis would not change under the pre-AIA versions of § 102 and § 103.

H. Testimonial Evidence

To support its challenges, Petitioner relies on the declaration of J. Gary Eden, Ph.D. (Exhibit 1004). Dr. Eden states, “I received the B.S. degree in Electrical Engineering from the University of Maryland (College Park) in 1972, the M.S. degree in Electrical Engineering in from the University of Illinois (Urbana) in 1973, and the Ph.D. degree in Electrical Engineering from the University of Illinois in 1976.” Ex. 1004 ¶ 6.

At this stage of the proceeding, Patent Owner does not introduce testimonial evidence concerning the patentability issues.

III. PATENTABILITY ANALYSIS

A. Legal Principles: Anticipation

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.

The “disclosure of a limited number of combination possibilities” may anticipate a claim. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 851 F.3d 1270, 1274 (Fed. Cir. 2017). Hence, a reference may anticipate “if that reference teaches that the disclosed components or

functionalities may be combined and one of skill in the art would be able to implement the combination.” *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1344 (Fed. Cir. 2016). The “dispositive question regarding anticipation [is] whether one skilled in the art would reasonably understand or infer from the [reference’s] teaching” that it discloses every claim element arranged as in the claim. *In re Baxter Travenol Lab’ys*, 952 F.2d 388, 390 (Fed. Cir. 1991); see *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003).

We analyze the anticipation issues according to these principles.

B. Legal Principles: Obviousness

A patent may not be obtained “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. An obviousness analysis involves underlying factual inquiries including (1) the scope and content of the prior art; (2) differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; and (4) where in evidence, objective indicia of nonobviousness, such as commercial success, long-felt but unsolved needs, and failure of others.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 35–36 (1966); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1047–48 (Fed. Cir. 2016) (en banc). When evaluating a combination of references, an obviousness analysis should address “whether there was an

⁵ The parties do not address objective indicia of nonobviousness. See, e.g., Pet. 15–89; Prelim. Resp. 9–34.

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).

We analyze the obviousness issues according to these principles.

C. Level of Ordinary Skill in the Art

Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* These factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). Moreover, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner asserts that a person of ordinary skill in the art at the ’336 patent’s effective filing date would have had “a bachelor’s degree in mechanical engineering, electrical engineering, optics, or physics with at least three years of experience working in the design of LED lights or lighting fixtures; a master’s degree in one of the above disciplines with at least two years of experience; or equivalent experience.” Pet. 14 (citing Ex. 1004 ¶¶ 26–29). Dr. Eden’s testimony supports Petitioner’s assertion. *See* Ex. 1004 ¶¶ 27–28.

At this stage of the proceeding, Patent Owner does not address Petitioner’s description of an ordinarily skilled artisan or propose an alternative description. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for purposes of this decision, we accept Petitioner’s description of an ordinarily skilled artisan because it comports with the technology and claims of the ’336 patent as well as the asserted references.

D. Claim Construction

We construe claim terms “using the same claim construction standard” that district courts use to construe claim terms in civil actions under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2024). Under that standard, claim terms “are given their ordinary and customary meaning, which is the meaning the term would have to a person of ordinary skill in the art at the time of the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 904 F.3d 965, 971 (Fed. Cir. 2018) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc)). The meaning of claim terms may be determined by “look[ing] 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).

Petitioner does not propose an explicit construction for any claim term at “this time.” Pet. 16. Instead, Petitioner “applies the same scope of the claim terms that [Patent Owner] applied in its complaint and its infringement contentions” in the Wisconsin case. *Id.*

Patent Owner does not propose an explicit construction for any claim term. *See, e.g.*, Prelim. Resp. 9–34.

“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Based on the current record, we determine that no claim term requires an explicit construction to decide whether Petitioner satisfies the “reasonable likelihood” standard for instituting trial.

*E. Alleged Anticipation by or Obviousness over
Chaimberg: Claims 1, 3, 6–9, 11–13, 15, and 17–19*

Petitioner contends that claims 1, 3, 6–9, 11–13, 15, and 17–19 are unpatentable under § 102 as anticipated by Chaimberg or § 103 as obvious over Chaimberg. *See* Pet. 15–46. Patent Owner contends that “it is not highly likely that Petitioner will prevail.” Prelim. Resp. 34.

Below, we provide an overview of Chaimberg. Then, we consider patentability issues. As explained below, Petitioner establishes sufficiently for purposes of institution that Chaimberg discloses or renders obvious the inventions covered by claims 1, 3, 6–9, 11–13, 15, and 17–19.

1. OVERVIEW OF CHAIMBERG (EXHIBIT 1003)

Chaimberg is a U.S. patent titled “Ceiling Mountable LED Light Fixture with Accessible CCT Selectable Switch,” filed on April 27, 2018, and issued on March 19, 2019. Ex. 1003, codes (12), (22), (45), (54). Chaimberg states that the invention “relates to light emitting diode (LED) light fixtures and more specifically to a ceiling mountable LED light fixture” having at least the following components:

- (1) “at least two sets of LED’s [sic] of different correlated color temperature (CCT)”;
- (2) a selector switch (a) “mounted in a cable secured to the LED light fixture” and (b) “readily accessible when the LED light fixture is removed from its ceiling mounting hole.”

Id. at 1:7–15; *see id.* at code (57).

Chaimberg explains that the “color of light is determined in terms of color temperature expressed in Kelvin degrees,” e.g., about 3000 Kelvin for “warm white light” and about 5400 Kelvin for “sunlight in the summer.”

Ex. 1003, 1:30–35. Chaimberg also explains that a ceiling-mountable LED light fixture may include an LED driver circuit inside a driver housing and a selector switch “mounted on the driver housing to select a desired color temperature of the LED light fixture.” *Id.* at 1:44–50. But Chaimberg identifies drawbacks with that arrangement, such as the following:

- (1) difficulty reaching or retracting the driver housing when changing the switch setting; and
- (2) the “hazard presented by the live wire connected to the driver circuit inside the driver housing, particularly if there is a fault in the wiring.”

Id. at 1:50–67; *see id.* at 3:29–41.

To address those drawbacks, Chaimberg discloses a ceiling-mountable LED light fixture where “the selector switch is readily available and visible to the end user by simply removing the light fixture” from the ceiling and then drawing “the selector switch out of the fixture mounting hole.”

Ex. 1003, 2:16–21; *see id.* at 2:22–45, code (57).

Chaimberg’s Figure 1 (reproduced below) is a perspective view of a ceiling-mountable LED light fixture:

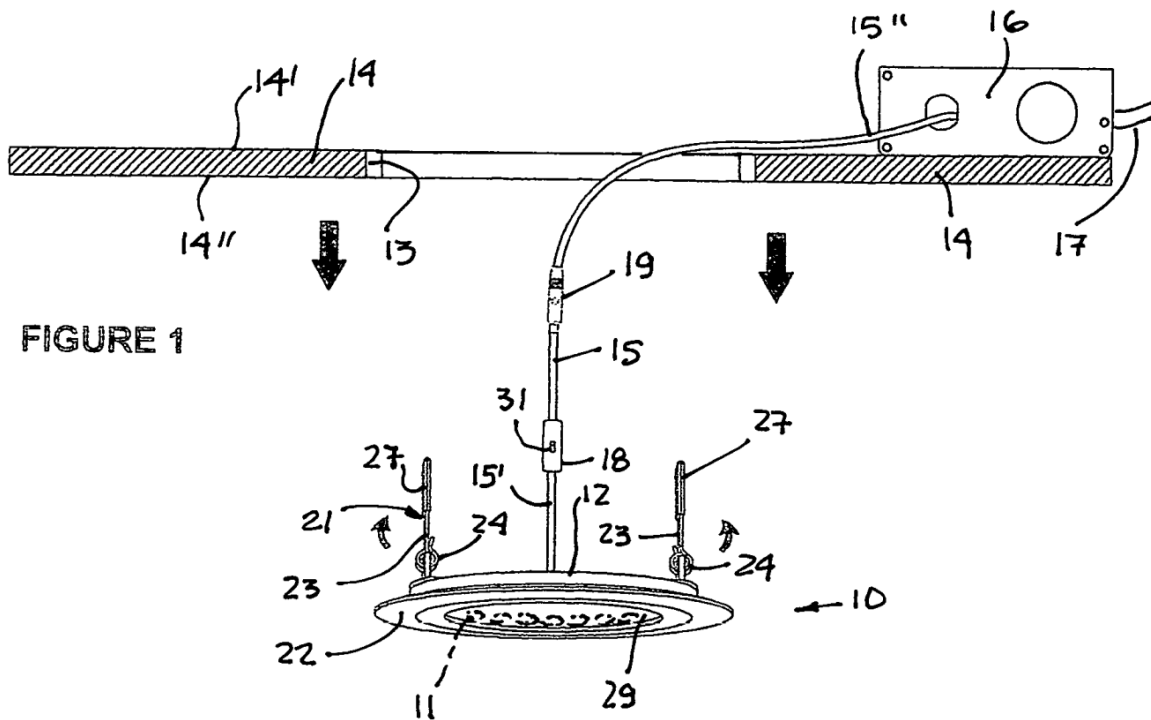


Figure 1 illustrates ceiling-mountable LED light fixture 10 with the following components:

- two sets of different color LEDs 11 (shown in phantom lines);
- housing 12 having external circumferential flange 22;
- driver housing 16 for driver circuit 20 (not shown) that receives “line voltage from live wire 17” and “drives either of the LED sets”;
- electrical cable 15 extending from end 15' at housing 12 to end 15" at driver housing 16;
- selector switch 18 mounted on cable 15 and including slide button 31;
- connector 19 for “disconnecting the cable lower end section 15' and the switch from the driver housing 16

should replacement of the LED light fixture be necessary for all sorts of reasons”;

- detachable retention means 21 for “removable securement” of the LED light fixture in the fixture mounting hole; and
- light-transmitting lens 29.

Ex. 1003, 2:51–57, 2:66–3:2, 3:18–25, 3:49–64, 4:30–37, Fig. 1.

Figure 1 shows LED light fixture 10 “retracted from its fixture mounting hole 13 formed in the ceiling sheeting material 14.” Ex. 1003, 3:14–16, Fig. 1. Driver housing 16 “can be secured to ceiling structural members not shown, before the installation of the sheeting material 14 or be conveniently located over the top surface 14' of the ceiling sheeting 14 through the mounting hole after the ceiling sheeting material is installed.” *Id.* at 3:25–29.

The two sets of LEDs 11 “have different Kelvin temperature ratings (CCT).” Ex. 1003, 3:5–6. For instance, the first set of LEDs generates a Kelvin temperature of 3000 K (“warm amber light”), and the second set of LEDs generates a Kelvin temperature of 5000 K (“white light”). *Id.* at 3:6–9; *see id.* at 4:32–34.

Cable 15 includes wires secured at end 15' to the two sets of LEDs 11 to “supply driving current to each of the sets” and secured at end 15" to driver circuit 20. Ex. 1003, 3:18–23, Figs. 1, 3. Cable 15 has “suitable length to provide access to the switch 18 without having to withdraw the driver housing 16 from the fixture mounting hole 13.” *Id.* at 3:51–54.

Selector switch 18 is “a toggle switch provided with a slide button 31 having two conducting arms 32 and 33 and displaceable to three switch positions.” Ex. 1003, 4:34–37, Fig. 3. In a first switch position, a first set of

LEDs receives current, e.g., to generate a Kelvin temperature of 3000 K. *Id.* at 4:37–48. In a second switch position, a second set of LEDs receives current, e.g., to generate a Kelvin temperature of 5000 K. *Id.* at 4:49–59. In a third switch position, both sets of LEDs receive current, e.g., to generate a Kelvin temperature of 4000 K. *Id.* at 4:60–5:10; *see id.* at 5:49–6:4.

Chaimberg’s Figure 2 (reproduced below) is a partly fragmented side view of the ceiling-mountable LED light fixture in Figure 1:

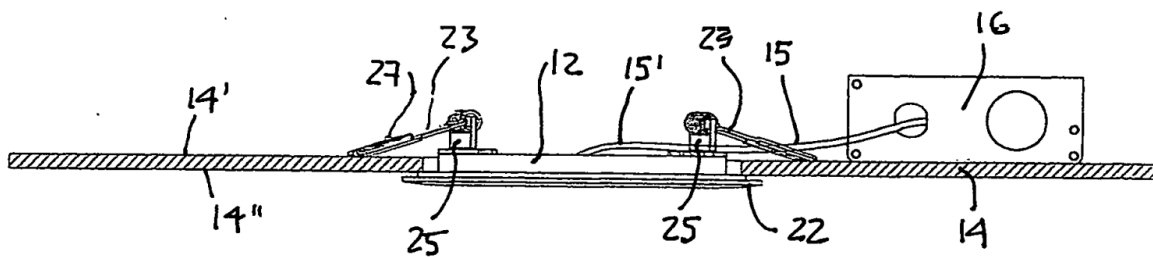


FIGURE 2

Figure 2 illustrates ceiling-mountable LED light fixture 10 “mounted in the fixture mounting hole of the ceiling sheet material.” Ex. 1003, 2:58–60, Fig. 2.

Chaimberg discloses that a ceiling-mountable LED light fixture may include “at least two” sets of LEDs with different correlated color temperatures. Ex. 1003, 1:7–15, 2:30–33, 5:16–19, code (57).

2. INDEPENDENT CLAIM 1

(a) Preamble

Claim 1 recites “[a] luminaire.” Ex. 1001, 14:31.

Petitioner contends that Chaimberg discloses claim 1’s preamble because (1) Chaimberg discloses a ceiling-mountable LED light fixture and (2) “the terms ‘luminaire’ and ‘light fixture’ are generally synonymous and

refer to a complete lighting unit.” Pet. 23–24 (citing Ex. 1003, 2:51–57, Fig. 1; Ex. 1004 ¶ 89).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 1’s preamble. *See, e.g.*, Prelim. Resp. 9–34. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Generally, a preamble does not limit a claim. *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). We need not decide whether claim 1’s preamble limits the claim because, based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses claim 1’s preamble. *See* Pet. 23–24; Ex. 1004 ¶¶ 88–90.

(b) Limitation 1a

Claim 1 recites “a housing comprising at least one outer surface that forms a first cavity.” Ex. 1001, 14:32–33 (limitation 1a).

Petitioner contends that Chaimberg discloses limitation 1a because Chaimberg’s LED light fixture includes housing 12 with (1) circumferential flange 22 and (2) a wall extending vertically from circumferential flange 22 toward ceiling sheeting material 14. Pet. 24–25 (citing Ex. 1003, 2:32–34, 3:3–5, 3:10–11, Fig. 1). Petitioner also contends that the wall’s outer surfaces and circumferential flange 22 form “a cavity that holds LEDs 11.” *Id.* at 25.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1a. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 1a. *See* Pet. 24–26; Ex. 1004 ¶¶ 91–96.

(c) Limitation 1b

Claim 1 recites “at least one electrical component disposed, at least in part, within the first cavity.” Ex. 1001, 14:34–35 (limitation 1b).

Petitioner contends that Chaimberg discloses limitation 1b because Chaimberg’s LED light fixture includes LEDs 11 that “are electrical components mounted inside the above-described ‘wall’ of the housing 12.” Pet. 26–27 (citing Ex. 1003, 2:66–3:12, Fig. 1). To support its contention, Petitioner provides a highlighted version of Chaimberg’s Figure 1 as reproduced below:

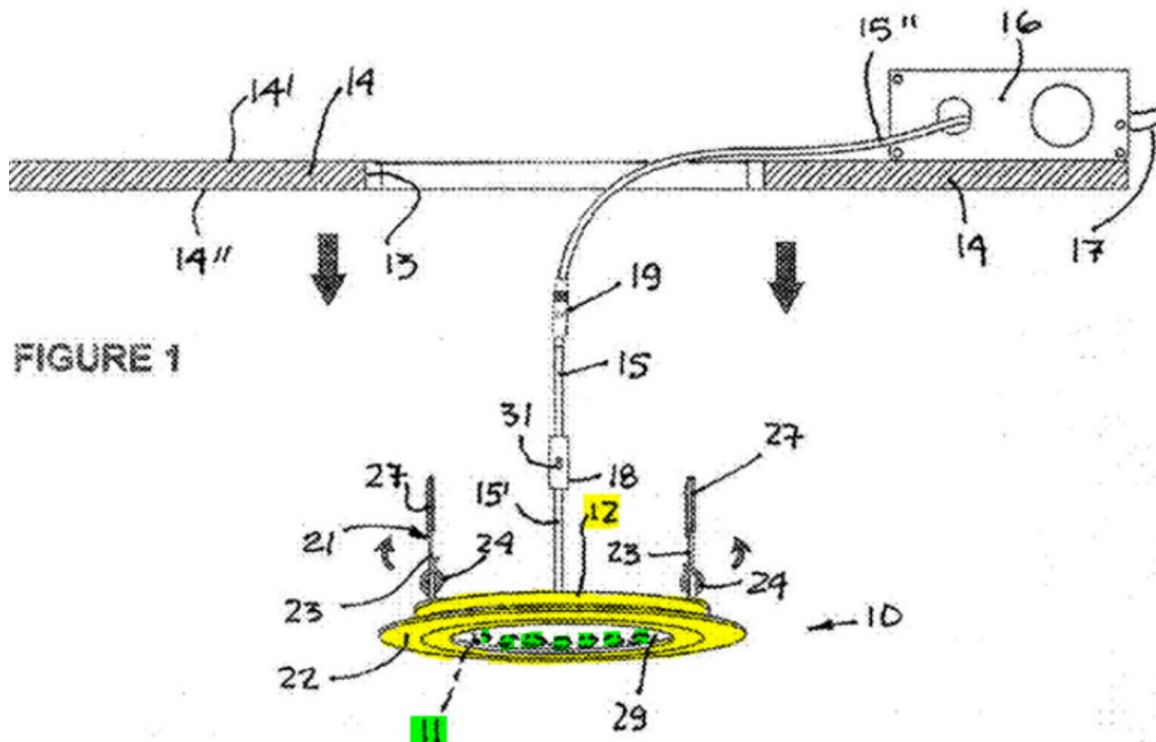


Figure 1 illustrates ceiling-mountable LED light fixture 10 with two sets of different color LEDs 11 and housing 12. Ex. 1003, 2:51–57, 2:66–3:2,

3:18–25, 3:49–64, 4:30–37, Fig. 1. The above version of Figure 1 includes highlighting as follows:

- green highlighting over reference numeral 11 denoting the light fixture’s LEDs;
- green highlighting over the structure corresponding to light fixture’s LEDs;
- yellow highlighting over reference numeral 12 denoting the light fixture’s housing; and
- yellow highlighting over the structure corresponding to light fixture’s housing.

See Pet. 27; Ex. 1004 ¶ 98.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1b. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 1b. *See* Pet. 26–27; Ex. 1004 ¶¶ 97–100.

(d) Limitation 1c

Claim 1 recites “an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component.” Ex. 1001, 14:36–38 (limitation 1c).

Petitioner contends that Chaimberg discloses limitation 1c because Chaimberg’s LED light fixture includes “cable 15 with wires ‘secured to the two sets of LED[s] to supply driving current to each of the sets.’” Pet. 28 (alteration by Petitioner) (quoting Ex. 1003, 3:19–20). Petitioner contends that cable 15 has a “first end” coupled to LEDs 11 that correspond to the claimed “at least one electrical component.” *Id.* (citing Ex. 1004 ¶ 102).

Petitioner contends that cable 15 has a “second end” secured to driver circuit 20 in driver housing 16. *Id.* (citing Ex. 1003, 3:17–25).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1c. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 1c. *See* Pet. 28–29; Ex. 1004 ¶¶ 101–103.

(e) Limitation 1d

Claim 1 recites “a switch coupled to the electrical cable, wherein the switch is disposed remotely from the housing.” Ex. 1001, 14:39–40 (limitation 1d).

Petitioner contends that Chaimberg discloses limitation 1d because Chaimberg’s LED light fixture includes selector switch 18 “mounted on cable 15,” “physically coupled to cable 15,” “electrically coupled to cable 15,” and “disposed remotely from the housing.” Pet. 29 (citing Ex. 1003, 3:49–54, 4:30–5:10, Fig. 1; Ex. 1004 ¶ 105). According to Petitioner, “manipulation of switch 18 controls the drive current supplied to one or more of the sets of LEDs.” *Id.* (citing Ex. 1003, 4:30–5:10).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1d. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 1d. *See* Pet. 29; Ex. 1004 ¶¶ 104–108.

(f) Limitation 1e

Claim 1 recites “wherein the switch has a plurality of positions, wherein each position of the plurality of positions of the switch corresponds to a discrete correlated color temperature (CCT) output by one or more light sources of the luminaire.” Ex. 1001, 14:40–45 (limitation 1e).

Petitioner contends that Chaimberg discloses limitation 1e because Chaimberg’s LED light fixture includes selector switch 18 that Chaimberg describes as “a toggle switch provided with a slide button 31 having two conducting arms 32 and 33 and displaceable to three switch positions.” Pet. 30 (citing Ex. 1003, 4:34–37). Petitioner also contends that the toggle switch’s three positions correspond to three discrete CCT outputs. *Id.*

Further, Petitioner asserts that Chaimberg identifies the following exemplary CCT outputs: “3000K (first position), 5000K (second position), and 4000K (third position).” Pet. 30 (citing Ex. 1003, 4:37–5:10). According to Petitioner, “Chaimberg’s driver circuit controls the output of light based on the setting of the switch 18.” *Id.* (citing Ex. 1003, 4:30–49, Fig. 3).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1e. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 1e. *See* Pet. 30; Ex. 1004 ¶¶ 109–111.

(g) Preliminary Conclusion About Patentability

As discussed above, Petitioner’s analysis addresses how Chaimberg discloses claim 1’s preamble and each limitation in claim 1 arranged as recited in the claim. *See supra* §§ III.E.2(a)–(f); Ex. 1004 ¶¶ 88–112.

Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 1 is unpatentable under § 102 as anticipated by Chaimberg.

3. INDEPENDENT CLAIM 13

(a) Preamble

Claim 13 recites “[a] switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire.” Ex. 1001, 15:21–22.

Petitioner contends that Chaimberg discloses claim 13’s preamble because Chaimberg’s LED light fixture includes selector switch 18 “for controlling a correlated color temperature (CCT) of light emitted by a luminaire.” Pet. 40 (citing Ex. 1004 ¶¶ 149–152).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 13’s preamble. *See, e.g.*, Prelim. Resp. 9–34.

Generally, a preamble does not limit a claim. *Allen Eng’g*, 299 F.3d at 1346. We need not decide whether claim 13’s preamble limits the claim because, based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses claim 13’s preamble. *See* Pet. 40; Ex. 1004 ¶¶ 149–152.

(b) Limitation 13a

Claim 13 recites “a body.” Ex. 1001, 15:24 (limitation 13a).

Petitioner contends that Chaimberg discloses limitation 13a because selector switch 18 is “a toggle switch provided with a slide button 31 [that is] displaceable to three switch positions” within “a body” where “the slide button 31 is located.” Pet. 40 (alteration by Petitioner) (quoting Ex. 1003, 4:34–37) (citing Ex. 1004 ¶ 154). To support its contention, Petitioner

provides a highlighted excerpt from Chaimberg's Figure 1 as reproduced below:

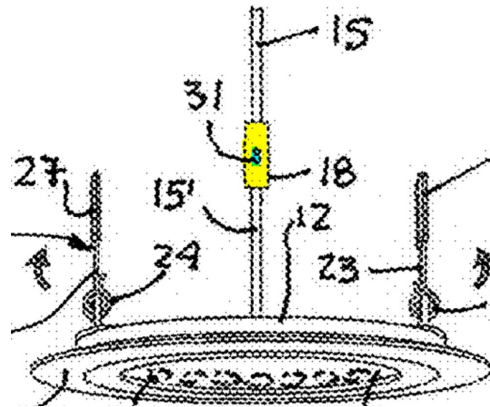


Figure 1 illustrates ceiling-mountable LED light fixture 10 with selector switch 18 including slide button 31. Ex. 1003, 2:51–57, 2:66–3:2, 3:18–25, 3:49–64, 4:30–37, Fig. 1. The above highlighted excerpt from Figure 1 includes yellow highlighting over the structure that Petitioner identifies as switch 18's body and blue highlighting over slide button 31. See Pet. 41; Ex. 1004 ¶ 154.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13a. See, e.g., Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden's testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 13a. See Pet. 40–41; Ex. 1004 ¶¶ 153–155.

(c) Limitation 13b

Claim 13 recites “at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire.” Ex. 1001, 15:25–28 (limitation 13b).

Petitioner contends that Chaimberg discloses limitation 13b because selector switch 18 is “mounted on the cable 15 adjacent to the LED light fixture housing 12.” Pet. 41 (quoting Ex. 1003, 3:49–51). Further, Petitioner asserts that an ordinarily skilled artisan “would have understood that the switch 18 includes at least one coupling feature and is configured to electrically couple to the electrical cable 15” because “the switch 18 is mounted on the electrical cable 15 and is used to adjust the CCT output of the LED light fixture.” *Id.* at 42 (citing Ex. 1004 ¶¶ 157–158).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13b. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg renders obvious limitation 13b. *See* Pet. 41–42; Ex. 1004 ¶¶ 156–159. More specifically, on this record, Petitioner establishes sufficiently for § 103 that Chaimberg teaches or suggests limitation 13b, but Petitioner does not establish sufficiently for § 102 that the claimed “first coupling feature” in Chaimberg is “disposed on the body” according to limitation 13b. *See* Pet. 41–42; Ex. 1004 ¶¶ 156–159. In particular, Petitioner does not show where Chaimberg describes the claimed “first coupling feature” as “disposed on the body” instead of “disposed in the body.” *See* Pet. 41–42; Ex. 1004 ¶¶ 156–159.

(d) Limitation 13c

Claim 13 recites “an actuator disposed on the body, wherein the actuator has a range of positions.” Ex. 1001, 16:1–2 (limitation 13c).

Petitioner contends that Chaimberg discloses limitation 13c because selector switch 18 includes slide button 31 that functions as “an actuator disposed on the body” of the switch. Pet. 42 (citing Ex. 1003, 4:30–63).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13c. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 13c. *See* Pet. 42–44; Ex. 1004 ¶¶ 160–168.

(e) Limitation 13d

Claim 13 recites “wherein each position of the range of positions of the actuator corresponds to a CCT of the light emitted by the luminaire.” Ex. 1001, 16:3–5 (limitation 13d).

Petitioner contends that Chaimberg discloses limitation 13d for the reasons Chaimberg discloses limitation 1e. Pet. 44–45; *see id.* at 30.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13d. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses limitation 13d. *See* Pet. 30, 44–45; Ex. 1004 ¶¶ 109–111, 169–171.

(f) Preliminary Conclusion About Patentability

As discussed above, Petitioner’s analysis addresses how Chaimberg discloses claim 13’s preamble and discloses or renders obvious each limitation in claim 13. *See supra* §§ III.E.3(a)–(e); Ex. 1004 ¶¶ 109–111,

149–172. Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 13 is unpatentable under § 103 as obvious over Chaimberg.

4. DEPENDENT CLAIMS 3, 6–9, 11, 12, 15, AND 17–19

Claims 3, 6–9, 11, and 12 depend directly from claim 1. Ex. 1001, 14:47–48, 14:63–15:13, 15:16–20. Claims 15 and 17–19 depend directly from claim 13. *Id.* at 16:9–10, 16:14–24.

For claims 3, 6–9, 11, 12, 15, and 17–19, Petitioner provides an analysis supported by Dr. Eden’s testimony about how Chaimberg discloses or renders obvious each limitation in each claim. *See* Pet. 30–39, 45–46; Ex. 1004 ¶¶ 113–148, 173–186.

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 3, 6–9, 11, 12, 15, and 17–19. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Chaimberg discloses or renders obvious each limitation in claims 3, 6–9, 11, 12, 15, and 17–19. *See* Pet. 30–39, 45–46; Ex. 1004 ¶¶ 113–148, 173–186. Hence, Petitioner demonstrates a reasonable likelihood of proving that claims 3, 6–9, 11, 12, 15, and 17–19 are unpatentable under § 102 as anticipated by Chaimberg or § 103 as obvious over Chaimberg.

*F. Alleged Obviousness over Chaimberg
and Roberge: Claims 2, 4, 5, 10, 14, 16, and 20*

Petitioner contends that claims 2, 4, 5, 10, 14, 16, and 20 are unpatentable under § 103 as obvious over Chaimberg and Roberge. *See* Pet. 15, 46–59. Patent Owner contends that “it is not highly likely that Petitioner will prevail.” Prelim. Resp. 34.

Above, we provided an overview of Chaimberg. *See supra* § III.E.1. Below, we provide an overview of Roberge. Then, we consider patentability issues. As explained below, Petitioner establishes sufficiently for purposes of institution that the combined disclosures in Chaimberg and Roberge teach the inventions covered by claims 2, 4, 5, 10, 14, 16, and 20.

1. OVERVIEW OF ROBERGE (EXHIBIT 1011)

Roberge is a U.S. patent titled “Lighting Methods and Systems,” filed on May 5, 2004, and issued on February 20, 2007. Ex. 1011, codes (12), (22), (45), (54). Roberge discloses lighting “methods and systems,” such as “linear lighting systems” having “a substantially linear housing holding a circuit board” supporting “a plurality of LEDs.” *Id.* at 1:28–31, code (57).

Roberge also discloses various configurations of light sources or LEDs, including “two white sources of varying characteristics, three white sources of varying characteristics, or four or more white sources of varying characteristics.” Ex. 1011, 7:18–36, Fig. 3. The characteristics include “wavelength, intensity, power, quality, light output, efficiency, [and] efficacy.” *Id.* at 7:23–26; *see id.* at 35:17–22. Multiple light sources may combine “to produce a mixed colored light (including essentially white light having a variety of color temperatures).” *Id.* at 7:41–46; *see id.* at 33:29–33.

Roberge's Figure 71 (reproduced below) depicts a linear lighting system:

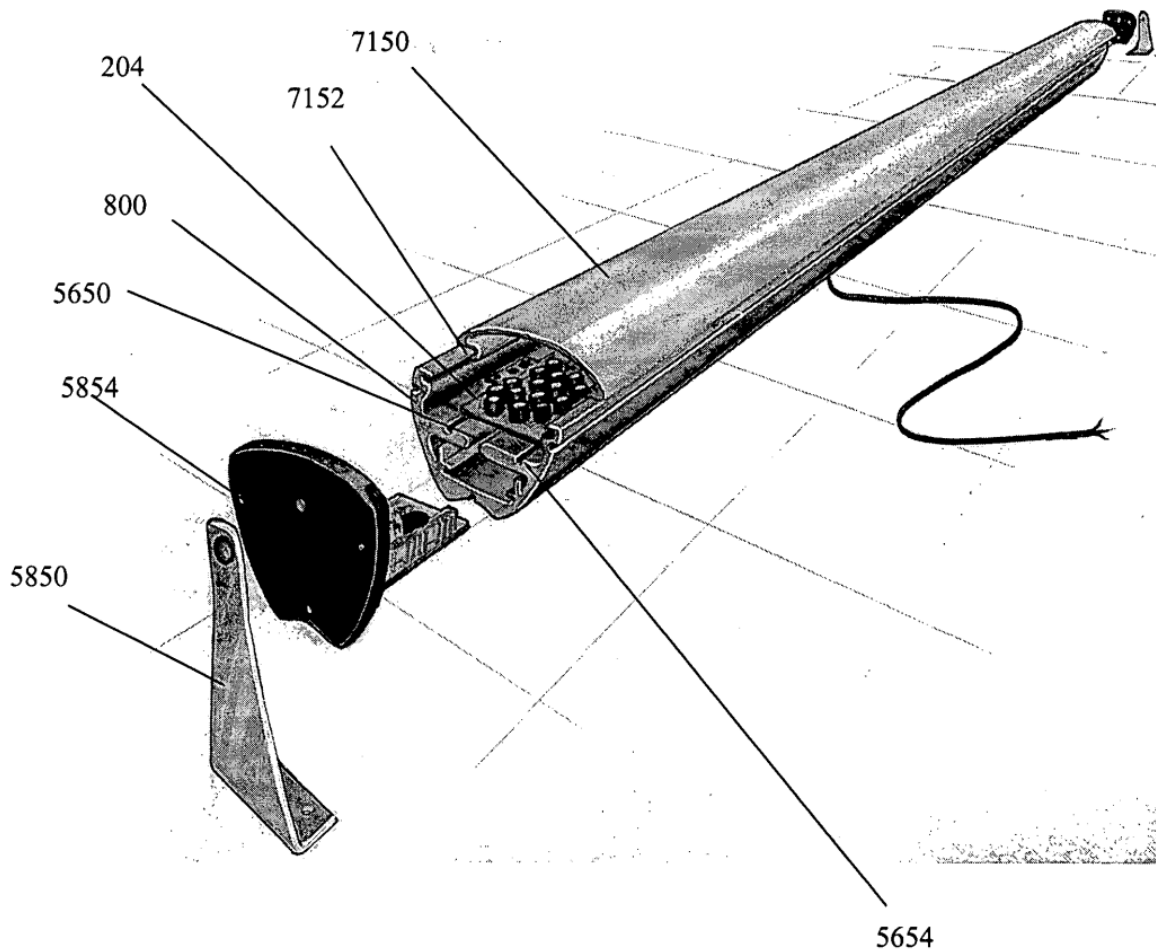


Fig. 71

Figure 71 illustrates a linear lighting system with the following components:

- circuit board 204 including multiple LEDs mounted on the circuit board;
- lens cover 7150;
- housing 800;
- mounting bracket 5850 for housing 800; and
- end plate 5854.

Ex. 1011, 4:34, 5:8–12, 66:43–52, Fig. 71.

Roberge's Figure 34i (reproduced below) depicts a rotary dial for selecting one or more color temperatures from a scale:

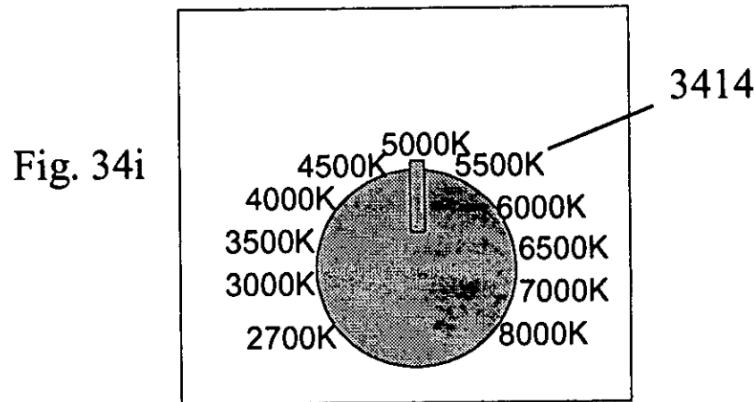


Figure 34i illustrates scale 3414 of color temperatures from 2700 K to 8000 K and a rotary dial allowing a user to select any of the following color temperatures: 2700 K, 3000 K, 3500 K, 4000 K, 4500 K, 5000 K, 5500 K, 6000 K, 6500 K, 7000 K, and 8000 K. Ex. 1011, 42:51–54, Fig. 34i.

With the Figure 34i arrangement, a “lighting designer can specify use of a particular color temperature of light, which the installer can select by setting the right position on the scale 3414 with the dial.” Ex. 1011, 42:54–57, Fig. 34i. Alternatively, a “slide mechanism can be used like the dial to set a particular color temperature of white light, or to select a particular color of non-white light, in either case on a scale.” *Id.* at 42:57–60. Additionally, “the slides, switches, dials, dipswitches and the like can be used to control a wide range of variables, such as color, color temperature, intensity, [and] hue.” *Id.* at 42:35–38.

Roberge explains that providing adjustable lighting units “offers designers and installers much greater control over the correct maintenance of the lighting of the environment.” Ex. 1011, 42:62–65.

2. DIFFERENCES BETWEEN THE CLAIMED
INVENTION AND THE PRIOR ART

(a) Claims 2, 4, 5, and 10

Claims 2, 4, 5, and 10 read as follows (with formatting added for clarity):

2. The luminaire of claim 1, wherein the switch is a dial.
4. The luminaire of claim 3, wherein the plurality of positions of the switch comprises a first position, a second position, a third position, a fourth position, and a fifth position.
5. The luminaire of claim 4,
 wherein the first position of the switch corresponds to 2700 Kelvin (K) output by the one or more light sources,
 wherein the second position of the switch corresponds to 3000 K output by the one or more light sources,
 wherein the third position of the switch corresponds to 3500 K output by the one or more light sources,
 wherein the fourth position of the switch corresponds to 4000 K output by the one or more light sources, and
 wherein the fifth position of the switch corresponds to 5000 K output by the one or more light sources.
10. The luminaire of claim 1, wherein the switch is a rotary switch.

Ex. 1001, 14:46, 14:49–62, 15:14–15.

Petitioner contends that Roberge discloses a “dial” according to claim 2 and a “rotary switch” according to claim 10 because Roberge’s Figure 34i depicts a rotary dial for selecting one or more color temperatures from scale 3414 having eleven values. Pet. 53, 57–58 (citing Ex. 1004 ¶¶ 36–38, 200–202, 222–224; Ex. 1011, 42:51–54, Fig. 34i). Petitioner contends that Roberge discloses the “plurality of positions” required by

claim 4 and the specific values required by claim 5 because scale 3414 includes the following five values: 2700 K, 3000 K, 3500 K, 4000 K, and 5000 K. *Id.* at 54–57 (citing Ex. 1004 ¶¶ 203–221; Ex. 1011, 42:51–59, Fig. 34i).

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 2, 4, 5, and 10. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Roberge discloses each limitation in claims 2, 4, 5, and 10. *See* Pet. 53–58; Ex. 1004 ¶¶ 36–38, 200–224.

(b) Claims 14, 16, and 20

Claims 14, 16, and 20 depend directly or indirectly from claim 13. Ex. 1001, 16:6–7, 16:11–13, 16:25–26.

For claims 14, 16, and 20, Petitioner provides an analysis supported by Dr. Eden’s testimony about how Roberge discloses or renders obvious each limitation in each claim. *See* Pet. 58–59; Ex. 1004 ¶¶ 225–234.

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 14, 16, and 20. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Roberge discloses or renders obvious each limitation in claims 14, 16, and 20. *See* Pet. 58–59; Ex. 1004 ¶¶ 225–234.

3. ALLEGED REASON TO COMBINE
THE TEACHINGS OF THE REFERENCES

Petitioner identifies a reason that would have prompted an ordinarily skilled artisan to combine Roberge’s teachings with Chaimberg’s teachings

in the way Petitioner proposes, e.g., to “provide a simple and effective means of selecting” when selecting from among more than three CCTs to improve “configurability and flexibility” with “a larger range of settings.” *See* Pet. 50–52. Dr. Eden’s testimony supports Petitioner’s position. *See* Ex. 1004 ¶¶ 187–199.

For instance, Dr. Eden testifies that an ordinarily skilled artisan “would have understood that the additional CCT values available with Roberge’s rotary switch would expand the capability of Chaimberg’s slide switch, thereby enabling Chaimberg to produce white light having CCT values beyond those discussed” in Chaimberg, i.e., 3000 K, 4000 K, and 5000 K. Ex. 1004 ¶ 197.

At this stage of the proceeding, Patent Owner makes no arguments against combining Roberge’s teachings with Chaimberg’s teachings. *See, e.g.,* Prelim. Resp. 9–34.

Based on the current record, Petitioner establishes sufficiently that an ordinarily skilled artisan would have had a reason to combine Roberge’s teachings with Chaimberg’s teachings in the way Petitioner proposes. *See* Pet. 50–52; Ex. 1004 ¶¶ 187–199.

4. PRELIMINARY CONCLUSION ABOUT PATENTABILITY

As discussed above, Petitioner’s analysis addresses how the combined disclosures in Chaimberg and Roberge teach the inventions covered by claims 2, 4, 5, 10, 14, 16, and 20. *See supra* §§ III.F.2(a)–(b). Additionally, Petitioner provides a reason with rational underpinning as to why an ordinarily skilled artisan would have been motivated to combine Roberge’s teachings with Chaimberg’s teachings in the way Petitioner proposes. *See supra* § III.F.3. Hence, Petitioner demonstrates a reasonable likelihood of

proving that claims 2, 4, 5, 10, 14, 16, and 20 are unpatentable under § 103 as obvious over Chaimberg and Roberge.

*G. Alleged Anticipation by or Obviousness over
Halliwell: Claims 1, 2–5, 7, 9–13, 15, 16, 19, and 20*

Petitioner contends that claims 1, 2–5, 7, 9–13, 15, 16, 19, and 20 are unpatentable under § 102 as anticipated by Halliwell or § 103 as obvious over Halliwell. *See* Pet. 15, 59–82. Patent Owner contends that “it is not highly likely that Petitioner will prevail.” Prelim. Resp. 34.

Below, we provide an overview of Halliwell. Then, we consider patentability issues. As explained below, Petitioner establishes sufficiently for purposes of institution that Halliwell discloses or renders obvious the inventions covered by claims 1, 2–5, 7, 9–13, 15, 16, 19, and 20.

1. OVERVIEW OF HALLIWELL (EXHIBIT 1012)

Halliwell is a U.S. patent titled “Light Emitting Diode (LED) Lighting Device or Lamp with Configurable Light Qualities,” filed on September 23, 2016, and issued on October 24, 2017. Ex. 1012, codes (12), (22), (45), (54). Halliwell states that the invention provides “an LED lighting device or LED lamp for which one or more aspects of the light emitted from the LED lighting device or LED lamp (e.g., color temperature, brightness, color rendering index (CRI), and/or the like) is configurable and/or adjustable.” *Id.* at 1:40–45; *see id.* at code (57). For example, “a particular LED lamp or LED lighting device may be configured to emit light at a user-selected color temperature.” *Id.* at 1:51–53. As examples of an LED lighting device, Halliwell identifies the following: “a lighting fixture, a luminaire, a floor lamp, a desk lamp, and/or the like.” *Id.* at 6:40–42.

Halliwell's Figure 2 (reproduced below) is a cross-sectional view of an example LED lighting device:

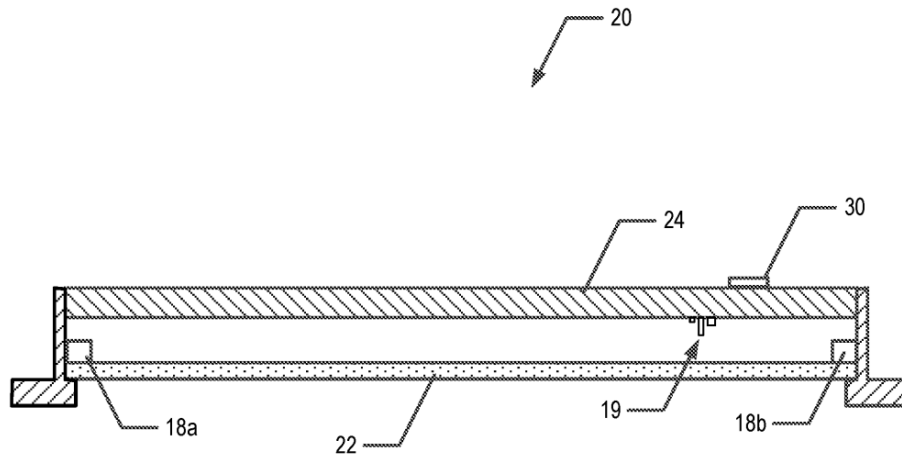


FIG. 2

Figure 2 illustrates LED lighting device 20, i.e., “an edge-lit LED flat panel lighting fixture,” with the following components:

- “one or more LED packages 18,” i.e., “first LED packages 18a and second LED packages 18b” where “the first LED packages 18a are configured to emit light of a different color temperature than the second LED packages 18b”;
- “driver circuitry 19” to “operate at least one of the two or more LED packages 18” and cause “LED lighting device 20 to emit light at the identified operating color temperature”;
- “device lens 22”;
- “device housing 24”;

- “switch 30”; and
- “switch control unit 35” (not shown).

Ex. 1012, 6:36–40, 6:51–54, 26:35–38, Fig. 2; *see id.* at 3:7–9.

Halliwell’s Figure 4 (reproduced below) depicts example electrical components for an LED lighting device:

FIG. 4

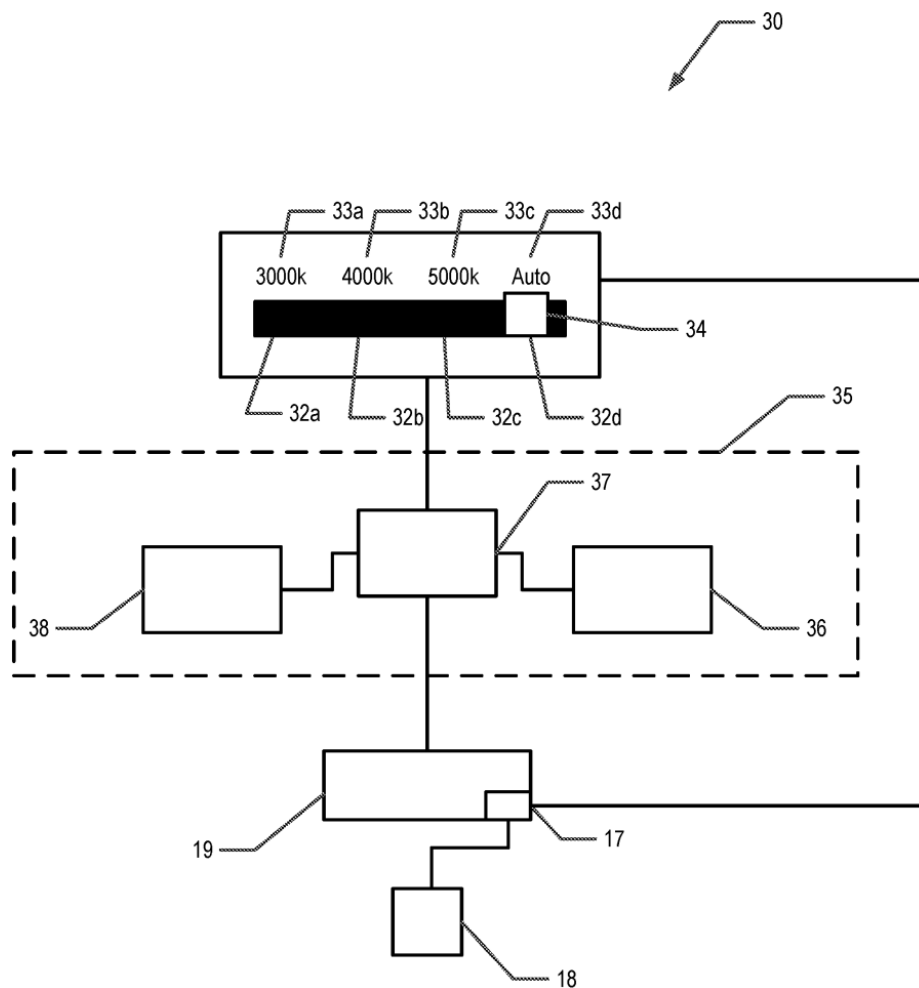


Figure 4 illustrates example electrical components for an LED lighting device, including switch 30 connected to the following electrical components:

- (1) switch control unit 35 comprising “one or more processing elements 37, one or more memory elements 36, and/or one or more communication interface elements 38”; and
- (2) driver circuitry 19 comprising “a plurality of provider circuits 17 configured to provide a controlled electrical current to a subset of the two or more LED packages 18 depending on the selected operating color temperature and/or the status of the switch 30.”

Ex. 1012, 3:26–29, 7:13–15, 9:27–32, 11:35–36, 11:55–58, 14:13–14, 14:22–25, Fig. 4; *see id.* at 7:24–32.

As Figure 4 shows, switch 30 includes “a plurality of switch positions 32 (e.g., 32a, 32b, 32c, 32d), switch position indicators 33 (e.g., 33a, 33b, 33c, 33d), and a switch selector 34.” Ex. 1012, 11:55–58, Fig. 4. But switch 30 may include “two, three, four, five, six, seven, eight, or more switch positions with each switch position corresponding to either a set operating mode, a selectively configurable operating mode, or a programmable custom operating mode.” *Id.* at 11:62–67.

Halliwell discloses the following illustrative settings for switch 30:

- (1) “the switch position indicator 33a indicates that if the switch selector 34 is placed in the switch position 32a” the selected operating color temperature is 3000 K;
- (2) “the switch position indicator 33b indicates that if the switch selector 34 is placed in the switch position 32b” the selected operating color temperature is 4000 K;
- (3) “the switch position indicator 33c indicates that if the switch selector 34 is placed in the switch position 32c” the selected operating color temperature is 5000 K; and
- (4) “the switch position indicator 33d indicates that if the switch selector 34 is placed in the switch position 32d” the configurable-operating-color-temperature mode

is selected, and the operating color temperature is “configurable by using a wall switch, remote control, and/or the like.”

Ex. 1012, 13:3–22, Fig. 4.

Halliwell explains that user interaction with a “remote switch” may produce a signal sent to switch control unit 35 that causes “a change in the topology of the driver circuitry 19” and operation with “a different set of LED packages 18” or “a modified current.” Ex. 1012, 11:22–33; *see id.* at 1:60–67. The “remote switch” may be “a wall and/or junction box mounted toggle switch, dimmer switch and/or the like in wired communication with the switch control unit 35.” *Id.* at 17:39–42; *see id.* at 2:34–36, 7:13–17.

2. INDEPENDENT CLAIM 1

(a) Preamble

Claim 1 recites “[a] luminaire.” Ex. 1001, 14:31.

Petitioner contends that Halliwell discloses claim 1’s preamble because Halliwell explains that LED lighting device 20 may be “a lighting fixture, a luminaire, . . . and/or the like.” Pet. 64 (alteration by Petitioner) (quoting Ex. 1012, 6:40–42).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 1’s preamble. *See, e.g.*, Prelim. Resp. 9–34.

Generally, a preamble does not limit a claim. *Allen Eng’g*, 299 F.3d at 1346. We need not decide whether claim 1’s preamble limits the claim because, based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses claim 1’s preamble. *See* Pet. 64; Ex. 1004

¶¶ 239–241.

(b) Limitation 1a

Claim 1 recites “a housing comprising at least one outer surface that forms a first cavity.” Ex. 1001, 14:32–33 (limitation 1a).

Petitioner contends that Halliwell discloses limitation 1a because LED lighting device 20 includes device housing 24 that “may be configured to house . . . one or more LED packages 18.” Pet. 64 (alteration by Petitioner) (quoting Ex. 1012, 6:55–56). According to Petitioner, device housing 24 “forms a cavity wherein the one or more LEDs 18, driver circuit 19, and device lens 22 are located.” *Id.* at 65 (citing Ex. 1004 ¶¶ 243–244).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1a. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 1a. *See* Pet. 64–65; Ex. 1004 ¶¶ 242–246.

(c) Limitation 1b

Claim 1 recites “at least one electrical component disposed, at least in part, within the first cavity.” Ex. 1001, 14:34–35 (limitation 1b).

Petitioner contends that Halliwell discloses limitation 1b because LED lighting device 20 includes (1) driver circuitry 19 and (2) one or more LED packages 18 “disposed at least in part within the first cavity formed by the device housing 24.” Pet. 65. To support its contention, Petitioner provides a highlighted version of Halliwell’s Figure 2 as reproduced below:

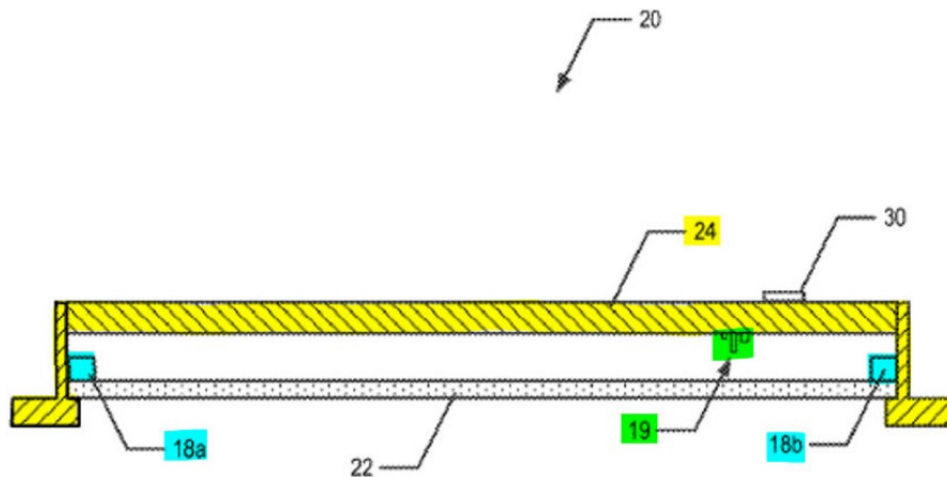


Figure 2 illustrates LED lighting device 20, i.e., “an edge-lit LED flat panel lighting fixture.” Ex. 1012, 6:36–40, 6:51–54, Fig. 2. The above version of Figure 2 includes highlighting as follows:

- blue highlighting over reference numeral 18a denoting first LED packages and reference numeral 18b denoting second LED packages;
- blue highlighting over the structures corresponding to the first LED packages and the second LED packages;
- green highlighting over reference numeral 19 denoting the driver circuitry;
- green highlighting over the structure corresponding to the driver circuitry;
- yellow highlighting over reference numeral 24 denoting the device housing; and
- yellow highlighting over the structure corresponding to the device housing.

See Pet. 66; Ex. 1004 ¶ 248.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1b. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 1b. *See* Pet. 65–66; Ex. 1004 ¶¶ 247–251.

(d) Limitation 1c

Claim 1 recites “an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component.” Ex. 1001, 14:36–38 (limitation 1c).

Petitioner contends that Halliwell discloses limitation 1c because Halliwell explains that “electrical components of the LED lighting device 20 (e.g., the driver circuitry 19, switch control unit 35, and/or the like) may be configured to be directly wired to line voltage (e.g., through a junction box).” Pet. 66 (emphases omitted) (quoting Ex. 1012, 7:13–17). Further, Petitioner asserts that an ordinarily skilled artisan “would have understood that the switch depicted in Fig. 4 would function as the ‘junction box mounted toggle switch . . . in wired communication with the switch control unit 35.’” *Id.* (alteration by Petitioner) (quoting Ex. 1012, 17:40–42).

Additionally, Dr. Eden testifies that an ordinarily skilled artisan would have understood that:

- (1) “since the ‘electrical components’ are ‘directly wired to line voltage’ as described by Halliwell, the LED luminaire would necessarily include an electrical cable that is electrically connected (‘coupled’) to the electrical components, e.g., the driver circuitry or LED packages 18”; and
- (2) “the cable’s conductors (i.e., wires within the cable) would have been coupled to the electrical components (e.g., the driver circuitry 19) located within the housing.”

Ex. 1004 ¶ 254 (emphases omitted).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1c. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 1c. *See* Pet. 66–67; Ex. 1004 ¶¶ 252–255.

(e) Limitation 1d

Claim 1 recites “a switch coupled to the electrical cable, wherein the switch is disposed remotely from the housing.” Ex. 1001, 14:39–40 (limitation 1d).

Petitioner contends that Halliwell discloses limitation 1d because LED lighting device 20 includes “a CCT switch.” Pet. 67 (citing Ex. 1012, 3:26–29, Fig. 4). Specifically, Petitioner identifies switch 30 shown in Halliwell’s Figure 4 that has four positions corresponding to four color-temperature modes, including 3000 K, 4000 K, and 5000 K. *Id.* at 67–68.

Petitioner asserts that an ordinarily skilled artisan “would have understood that Halliwell’s LED luminaire would have used a switch like the one disclosed in Fig. 4 as the ‘junction box mounted’ CCT switch.” Pet. 68 (citing Ex. 1004 ¶¶ 235–238). Petitioner further asserts that if “the switch is mounted in the junction box as disclosed in Halliwell, and the ‘electrical components’ are ‘directly wired to line voltage’ as disclosed in Halliwell,” then “the ‘junction box mounted’ CCT switch would necessarily be coupled to the electrical cable and disposed remotely from the housing 24.” *Id.* (citing Ex. 1004 ¶¶ 253–254).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1d. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell renders obvious limitation 1d. *See* Pet. 67–68; Ex. 1004 ¶¶ 235–238, 253–254, 256–260. More specifically, on this record, Petitioner establishes sufficiently for § 103 that Halliwell teaches or suggests limitation 1d, but Petitioner does not establish sufficiently for § 102 that the claimed “switch” in Halliwell is “disposed remotely from the housing” according to limitation 1d. *See* Pet. 67–68; Ex. 1004 ¶¶ 235–238, 253–254, 256–260.

In particular, Halliwell depicts LED lighting device 20 (the allegedly anticipating luminaire) with switch 30 mounted on device housing 24, not “disposed remotely from the housing.” Ex. 1012, 6:65–7:2, Figs. 2, 2A, 2C, 2E. Additionally, however, Halliwell discloses using a “remote” switch to adjust the operating color temperature. *Id.* at 13:18–22, 17:34–42; *see id.* at 2:28–36, 7:13–19.

(f) Limitation 1e

Claim 1 recites “wherein the switch has a plurality of positions, wherein each position of the plurality of positions of the switch corresponds to a discrete correlated color temperature (CCT) output by one or more light sources of the luminaire.” Ex. 1001, 14:40–45 (limitation 1e).

Petitioner contends that Halliwell discloses limitation 1e because Halliwell explains that “switch 30 may comprise a plurality of switch positions,” including “two, three, four, five, six, seven, eight or more switch positions.” Pet. 68 (quoting Ex. 1012, 11:56, 11:63–64). Further, Petitioner asserts that Halliwell’s Figure 4 shows switch 30 with “four positions that ‘correspond to set operating color temperature modes with each position

corresponding to a particular set operating color temperature,” including 3000 K, 4000 K, and 5000 K. *Id.* at 69 (quoting Ex. 1012, 12:11–13). According to Petitioner, “[t]hese three color temperature outputs are discrete.” *Id.* (citing Ex. 1004 ¶¶ 263–264).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 1e. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 1e. *See* Pet. 68–69; Ex. 1004 ¶¶ 261–264.

(g) Preliminary Conclusion About Patentability

As discussed above, Petitioner’s analysis addresses how Halliwell discloses claim 1’s preamble and discloses or renders obvious each limitation in claim 1. *See supra* §§ III.G.2(a)–(f); Ex. 1004 ¶¶ 239–265. Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 1 is unpatentable under § 103 as obvious over Halliwell.

3. INDEPENDENT CLAIM 13

(a) Preamble

Claim 13 recites “[a] switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire.” Ex. 1001, 15:21–22.

Petitioner contends that Halliwell discloses claim 13’s preamble because LED lighting device 20 includes “a CCT switch.” Pet. 76 (citing Ex. 1012, 12:60–13:14, Fig. 4). Specifically, Petitioner identifies switch 30 shown in Halliwell’s Figure 4 that has four positions corresponding to four color-temperature modes, including 3000 K, 4000 K, and 5000 K. *Id.* (citing Ex. 1012, 12:60–13:14, Fig. 4). Further, Petitioner asserts that an ordinarily skilled artisan “would have understood that Halliwell’s LED luminaire

would use a switch, like the one disclosed in Fig. 4 as the ‘junction box mounted’ CCT switch.” *Id.* (citing Ex. 1004 ¶¶ 304–305; Ex. 1012, 17:39–42).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 13’s preamble. *See, e.g.*, Prelim. Resp. 9–34.

Generally, a preamble does not limit a claim. *Allen Eng’g*, 299 F.3d at 1346. We need not decide whether claim 13’s preamble limits the claim because, based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses claim 13’s preamble. *See* Pet. 76; Ex. 1004 ¶¶ 303–306.

(b) Limitation 13a

Claim 13 recites “a body.” Ex. 1001, 15:24 (limitation 13a).

Petitioner contends that Halliwell discloses limitation 13a because switch 30 includes “a body.” Pet. 77 (citing Ex. 1004 ¶ 308). To support its contention, Petitioner provides a highlighted excerpt from Halliwell’s Figure 4 as reproduced below:

FIG. 4

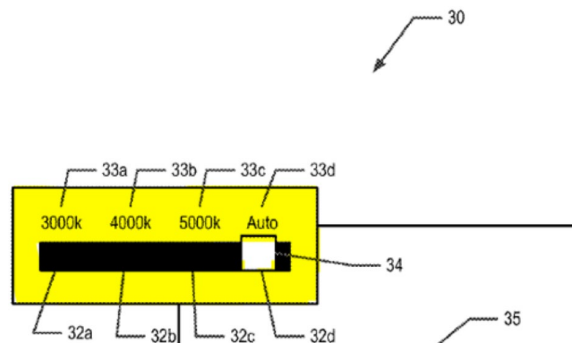


Figure 4 illustrates example electrical components for an LED lighting device, including switch 30. Ex. 1012, 3:26–29, 11:35–36, 11:55–58, Fig. 4.

The above highlighted excerpt from Figure 4 includes yellow highlighting over the structure that Petitioner identifies as switch 30's body. *See* Pet. 77; Ex. 1004 ¶ 308.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13a. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden's testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 13a. *See* Pet. 77; Ex. 1004 ¶¶ 307–309.

(c) Limitation 13b

Claim 13 recites “at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire.” Ex. 1001, 15:25–28 (limitation 13b).

Petitioner contends that Halliwell discloses limitation 13b because Halliwell explains that “electrical components of the LED lighting device 20 (e.g., the driver circuitry 19, switch control unit 35, and/or the like) may be configured to be directly wired to line voltage (e.g., through a junction box).” Pet. 77–78 (quoting Ex. 1012, 7:13–17). Petitioner also contends that “when the ‘electrical components’ are ‘directly wired to line voltage’ as disclosed in Halliwell, the LED lighting device would necessarily include an electrical cable that is coupled to the luminaire and junction box.” *Id.* at 78 (citing Ex. 1004 ¶ 312). Further, Petitioner asserts that if “Halliwell's CCT switch is mounted in the junction box, and the ‘electrical components’ are ‘directly wired to line voltage’ as disclosed in Halliwell,” then “the ‘junction box mounted’ CCT switch would necessarily be coupled to the electrical cable.” *Id.* (citing Ex. 1004 ¶ 312).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13b. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell renders obvious limitation 13b. *See* Pet. 77–78; Ex. 1004 ¶¶ 310–313. More specifically, on this record, Petitioner establishes sufficiently for § 103 that Halliwell teaches or suggests limitation 13b, but Petitioner does not establish sufficiently for § 102 that the claimed “first coupling feature” in Halliwell is “disposed on the body” according to limitation 13b. *See* Pet. 77–78; Ex. 1004 ¶¶ 310–313. In particular, Petitioner does not show where Halliwell describes the claimed “first coupling feature” as “disposed on the body” instead of “disposed in the body.” *See* Pet. 77–78; Ex. 1004 ¶¶ 310–313.

(d) Limitation 13c

Claim 13 recites “an actuator disposed on the body, wherein the actuator has a range of positions.” Ex. 1001, 16:1–2 (limitation 13c).

Petitioner contends that Halliwell discloses limitation 13c because switch 30 includes “an actuator” with four positions, including 3000 K, 4000 K, and 5000 K. Pet. 78 (citing Ex. 1004 ¶ 315; Ex. 1012, 12:60–13:14, Fig. 4). To support its contention, Petitioner provides a highlighted excerpt from Halliwell’s Figure 4 as reproduced below:

FIG. 4

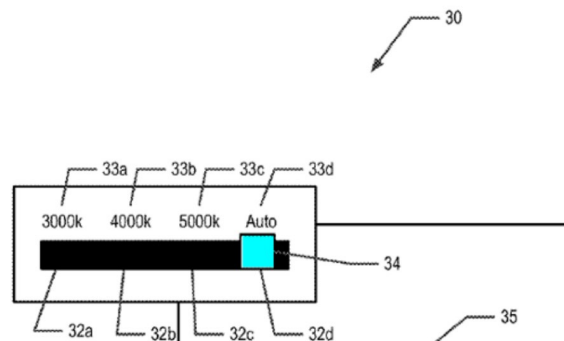


Figure 4 illustrates example electrical components for an LED lighting device, including switch 30. Ex. 1012, 3:26–29, 11:35–36, 11:55–58, Fig. 4. The above highlighted excerpt from Figure 4 includes blue highlighting over the structure that Petitioner identifies as switch 30’s actuator, i.e., switch selector 34. See Pet. 78; Ex. 1004 ¶ 315.

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13c. See, e.g., Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 13c. See Pet. 78–80; Ex. 1004 ¶¶ 314–320.

(e) Limitation 13d

Claim 13 recites “wherein each position of the range of positions of the actuator corresponds to a CCT of the light emitted by the luminaire.” Ex. 1001, 16:3–5 (limitation 13d).

Petitioner contends that Halliwell discloses limitation 13d because switch 30 has four positions corresponding to four color-temperature modes, including 3000 K, 4000 K, and 5000 K. Pet. 80 (citing Ex. 1004 ¶ 322; Ex. 1012, 12:60–13:14, Fig. 4).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13d. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses limitation 13d. *See* Pet. 80–81; Ex. 1004 ¶¶ 321–323.

(f) Preliminary Conclusion About Patentability

As discussed above, Petitioner’s analysis addresses how Halliwell discloses claim 13’s preamble and discloses or renders obvious each limitation in claim 13. *See supra* §§ III.G.3(a)–(e); Ex. 1004 ¶¶ 303–324. Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 13 is unpatentable under § 103 as obvious over Halliwell.

4. DEPENDENT CLAIMS 2–5, 7, 9–12, 15, 16, 19, AND 20

Claims 2–5, 7, and 9–12 depend directly or indirectly from claim 1. Ex. 1001, 14:46–62, 14:65–15:2, 15:12–20. Claims 15, 16, 19, and 20 depend directly or indirectly from claim 13. *Id.* at 16:9–13, 16:23–26.

For claims 2–5, 7, 9–12, 15, 16, 19, and 20, Petitioner provides an analysis supported by Dr. Eden’s testimony about how Halliwell discloses or renders obvious each limitation in each claim. *See* Pet. 69–76, 81–82; Ex. 1004 ¶¶ 266–302, 325–336.

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 2–5, 7, 9–12, 15, 16, 19, and 20. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Halliwell discloses or renders obvious each limitation in claims 2–5, 7,

9–12, 15, 16, 19, and 20. *See* Pet. 69–76, 81–82; Ex. 1004 ¶¶ 266–302, 325–336. Hence, Petitioner demonstrates a reasonable likelihood of proving that claims 2–5, 7, 9–12, 15, 16, 19, and 20 are unpatentable under § 103 as obvious over Halliwell.

*H. Alleged Anticipation by or
Obviousness over Reiff: Claims 13 and 15*

Petitioner contends that claims 13 and 15 are unpatentable under § 102 as anticipated by Reiff or § 103 as obvious over Reiff. *See* Pet. 15, 82–89. Patent Owner contends that “it is not highly likely that Petitioner will prevail.” Prelim. Resp. 34.

Below, we provide an overview of Reiff. Then, we consider patentability issues. As explained below, Petitioner establishes sufficiently for purposes of institution that Reiff discloses or renders obvious the inventions covered by claims 13 and 15.

1. OVERVIEW OF REIFF (EXHIBIT 1013)

Reiff is a U.S. patent titled “Light Fixture,” filed on July 12, 2004, and issued on March 20, 2007. Ex. 1013, codes (12), (22), (45), (54). Reiff states that the invention “relates to lighting having multiple sources of light particularly useful for specialized industrial or military applications” where “the color of light emitted can be changed by an in line switch.” *Id.* at 1:6–10; *see id.* at 2:17–22, 3:7–11, code (57). Reiff identifies various advantages of the invention, including that (1) “the light may be provided with both a conventional white light source and a specialized light source such as red, blue, or UV lights,” and (2) “the light is easily operable between the multiple light sources and is dimmable.” *Id.* at 2:23–28; *see id.* at 2:11–16, 2:29–33, 3:13–15.

Reiff's Figure 2 (reproduced below) depicts an example light or light fixture:

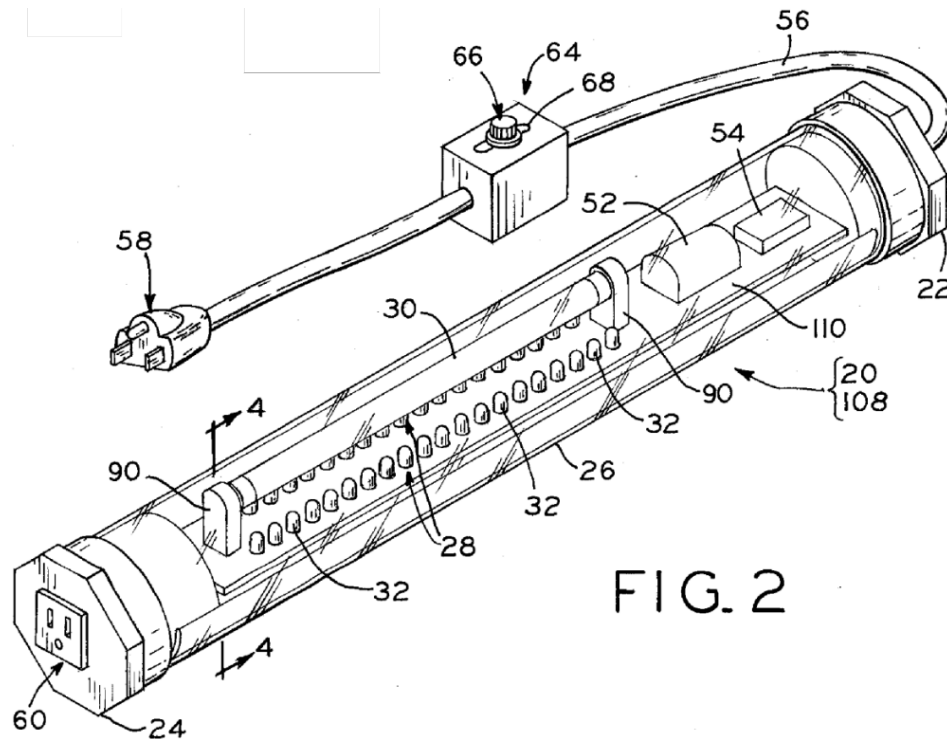


Figure 2 illustrates light 108 with the following components:⁶

- “transparent cylindrical housing 26 closed at both ends by end caps 22 and 24”;
- “two light sources 28,” i.e., “fluorescent lamp 30 emitting white light and LEDs 32 emitting red, blue, or UV light”;
- “conventional fluorescent ballast 52” located “in housing 26 near end cap 22” and “electrically connected to fluorescent lamp 30 to regulate current entering the lamp”;

⁶ Reiff uses the nomenclature “light 108” to identify the light fixture in Figures 2 and 4 and “light 20” to identify the light fixture in Figures 1, 2, 5, and 7. Ex. 1013, 3:20–22, 5:62–66. Otherwise, “[c]orresponding reference characters indicate corresponding parts throughout the several views.” *Id.* at 2:64–65.

- “LED driver 54 for regulating the input current prior to illuminating LEDs 32”;
- “electrical cord 56 extending from end cap 22” and “having plug 58 at a distal end of the cord for insertion into a conventional electrical outlet” to receive “conventional 120-volt power”;
- “conventional electrical outlet 60” located “in end cap 24” so that “other electrically operated devices” may be “plugged into electrical outlet 60”;
- “control box 64” located “along electrical cord 56” and including “switch 66 for operating fluorescent lamp 30 and LEDs 32” that “slides linearly in slot 68 formed in control box 64”; and
- “circuit board 110” used to mount LEDs 32 and mount fluorescent lamp 30 with contact posts 90.

Ex. 1013, 2:45–46, 4:11–19, 4:33–36, 5:23–24, 5:31–33, 5:62–6:20, Fig. 2; *see id.* at 1:66–2:3, 2:17–22, 3:20–27, 4:28–32, code (57).

Switch 66 has three positions: (1) “one position being the off position”; (2) “one position operating the fluorescent lamp”; and (3) “one position operating the LEDS.” Ex. 1013, 6:20–23, Fig. 2. Switch 66 “slides into one of the three positions and is rotatable to control the intensity of the light source.” *Id.* at 6:23–25; *see id.* at 4:33–36.

2. INDEPENDENT CLAIM 13

(a) Preamble

Claim 13 recites “[a] switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire.” Ex. 1001, 15:21–22.

Petitioner contends that Reiff discloses claim 13’s preamble because Reiff’s light 108 includes (1) “both LED light sources and a fluorescent light source” and (2) control box 64 with “a switch for . . . selecting between the

different light sources,” i.e., either “a regular white light fluorescent light source can be selected, or a ‘colored’ LED light source can be selected.” Pet. 84 (alteration by Petitioner) (quoting Ex. 1013, 4:28–32). Further, Petitioner asserts that each light source “emits a different color of light” and therefore “emits light at a different CCT.” *Id.* (citing Ex. 1004 ¶ 338; Ex. 1013, 2:19–22).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 13’s preamble. *See, e.g.*, Prelim. Resp. 9–34.

Generally, a preamble does not limit a claim. *Allen Eng’g*, 299 F.3d at 1346. We need not decide whether claim 13’s preamble limits the claim because, based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Reiff discloses claim 13’s preamble. *See* Pet. 84–85; Ex. 1004 ¶¶ 337–339.

(b) Limitation 13a

Claim 13 recites “a body.” Ex. 1001, 15:24 (limitation 13a).

Petitioner contends that Reiff discloses limitation 13a because (1) control box 64 includes switch 66 that is “linearly slideable in slot 68” and (2) control box 64 “provides and necessarily includes a body for the switch.” Pet. 85–86 (citing Ex. 1013, 4:28–36, Fig. 2).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13a. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Reiff discloses limitation 13a. *See* Pet. 85–86; Ex. 1004 ¶¶ 340–342.

(c) Limitation 13b

Claim 13 recites “at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire.” Ex. 1001, 15:25–28 (limitation 13b).

Petitioner contends that Reiff discloses limitation 13b because Reiff’s light 108 includes:

- (1) electrical cord 56 with “plug 58 at a distal end of the cord for insertion into a conventional electrical outlet” to receive “conventional 120-volt power”; and
- (2) control box 64 located “along electrical cord 56.”

Pet. 86 (quoting Ex. 1013, 4:16–19, 6:18–19). Petitioner contends that because “control box 64 is located on the electrical cable 56, it is necessarily electrically coupled to electrical cable 56, and therefore must include at least one coupling feature.” *Id.* (citing Ex. 1004 ¶ 344).

Additionally, Dr. Eden testifies that “both the input and output terminals of the control box (and switch) must be electrically connected to the cable 56 by soldering, screw terminals, spade lugs, pins, or a myriad of other connectors or connections.” Ex. 1004 ¶ 344 (emphasis omitted). Further, Dr. Eden explains that if “the control box (and switch) and cable are not electrically connected, current will not flow and the luminaire will not function.” *Id.*

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13b. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Reiff renders obvious limitation 13b. *See* Pet. 86–87; Ex. 1004

¶¶ 343–345. More specifically, on this record, Petitioner establishes sufficiently for § 103 that Reiff teaches or suggests limitation 13b, but Petitioner does not establish sufficiently for § 102 that the claimed “first coupling feature” in Reiff is “disposed on the body” according to limitation 13b. *See* Pet. 86–87; Ex. 1004 ¶¶ 343–345. In particular, Petitioner does not show where Reiff describes the claimed “first coupling feature” as “disposed on the body” instead of “disposed in the body.” *See* Pet. 86–87; Ex. 1004 ¶¶ 343–345.

(d) Limitation 13c

Claim 13 recites “an actuator disposed on the body, wherein the actuator has a range of positions.” Ex. 1001, 16:1–2 (limitation 13c).

Petitioner contends that Reiff discloses limitation 13c because control box 64 includes switch 66 that has as “an actuator.” Pet. 87 (citing Ex. 1004 ¶ 347). To support its contention, Petitioner provides a highlighted version of Reiff’s Figure 2 as reproduced below:

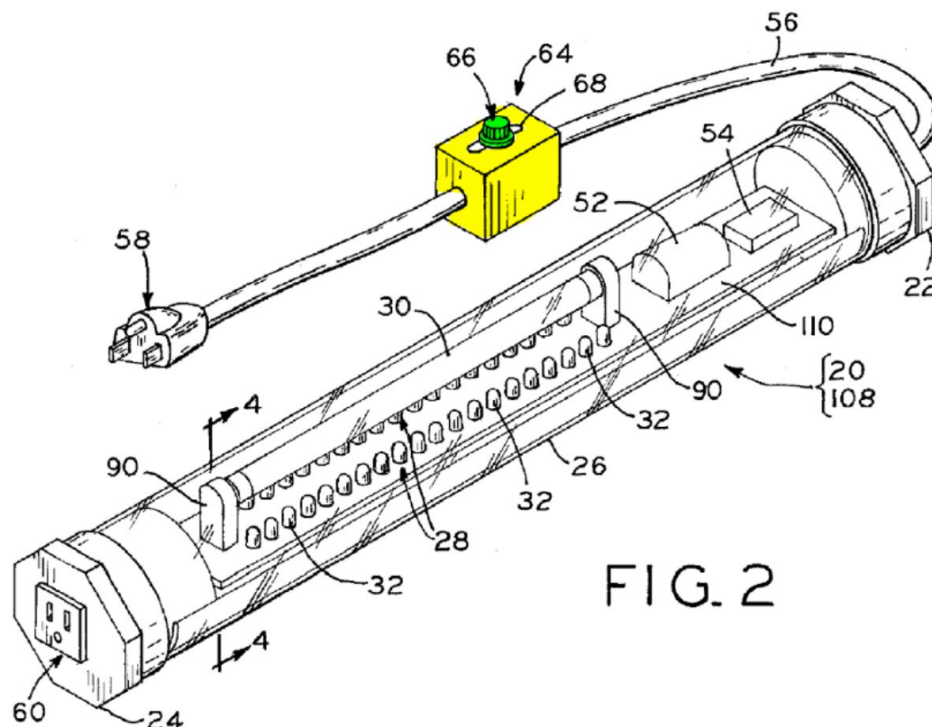


Figure 2 illustrates light 108 with “control box 64” located “along electrical cord 56” and including “switch 66 for operating fluorescent lamp 30 and LEDs 32” that “slides linearly in slot 68 formed in control box 64.”

Ex. 1013, 2:45–46, 4:11–19, 4:33–36, 5:23–24, 5:31–33, 5:62–6:20, Fig. 2.

The above version of Figure 2 includes highlighting as follows:

- yellow highlighting over the structure in control box 64 that Petitioner identifies as the claimed “body”; and
- green highlighting over the structure in switch 66 that Petitioner identifies as the claimed “actuator.”

See Pet. 88; Ex. 1004 ¶ 347.

To further support its contention, Petitioner quotes Reiff’s disclosure about switch 66 as follows: “Switch 66 has three positions, one position being the off position as shown in Fig. 2, one position operating the fluorescent lamp and one position operating the LEDS. Switch 66 slides into one of the three positions.” Pet. 87 (quoting Ex. 1013, 6:20–24).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13c. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Reiff discloses limitation 13c. *See* Pet. 87–88; Ex. 1004 ¶¶ 346–348.

(e) Limitation 13d

Claim 13 recites “wherein each position of the range of positions of the actuator corresponds to a CCT of the light emitted by the luminaire.”

Ex. 1001, 16:3–5 (limitation 13d).

Petitioner contends that Reiff discloses limitation 13d because control box 64 includes switch 66 with “three positions, one position being the off position as shown in Fig. 2, one position operating the fluorescent lamp and

one position operating the LEDS,” and switch 66 “slides into one of the three positions.” Pet. 88 (quoting Ex. 1013, 6:20–24). Petitioner also contends that each light source “emits a different color of light” and therefore “emits light at a different CCT.” *Id.* (citing Ex. 1004 ¶ 350; Ex. 1013, 2:19–22).

Further, Petitioner asserts that “the two ‘on’ positions correspond to different CCT emitted by the luminaire” and constitute a “range of positions.” Pet. 88–89. Petitioner explains that (1) “the LED operating position corresponds to a CCT emitted by the LEDs” and (2) “the fluorescent lamp operating position corresponds to a ‘different’ CCT emitted by the fluorescent lamp.” *Id.* at 88 (citing Ex. 1004 ¶¶ 350–351).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation 13d. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden’s testimony, Petitioner establishes sufficiently that Reiff discloses limitation 13d. *See* Pet. 88–89; Ex. 1004 ¶¶ 349–351.

(f) Preliminary Conclusion About Patentability

As discussed above, Petitioner’s analysis addresses how Reiff discloses claim 13’s preamble and discloses or renders obvious each limitation in claim 13. *See supra* §§ III.H.2(a)–(e); Ex. 1004 ¶¶ 337–352. Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 13 is unpatentable under § 103 as obvious over Reiff.

3. DEPENDENT CLAIM 15

Claim 15 depends directly from claim 13 and specifies that “each position is discrete within the range of positions.” Ex. 1001, 16:9–10.

Petitioner contends that Reiff discloses claim 15's limitation because (1) control box 64 includes switch 66 with two "on" positions that constitute a "range of positions" and (2) "the switch actuator can only be set to one position at a time." Pet. 89 (citing Ex. 1004 ¶¶ 353–354).

At this stage of the proceeding, Patent Owner makes no arguments specific to claim 15. *See, e.g.*, Prelim. Resp. 9–34.

Based on the current record and for the reasons stated by Petitioner and supported by Dr. Eden's testimony, Petitioner establishes sufficiently that Reiff discloses claim 15's limitation. *See* Pet. 89; Ex. 1004 ¶¶ 353–354. Hence, Petitioner demonstrates a reasonable likelihood of proving that claim 15 is unpatentable under § 103 as obvious over Reiff.

IV. CONCLUSION

Based on the arguments and evidence presented by the parties, we determine that there is a reasonable likelihood Petitioner would prevail with respect to at least one claim challenged in the Petition. Hence, we institute an *inter partes* review of all challenged claims on all challenges included in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (noting that the language of 35 U.S.C. § 314(b) "indicates a binary choice—either institute review or don't"); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute as requiring "a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition"); 37 C.F.R. § 42.108(a).

At this preliminary stage, we have not made a final determination about the patentability of any challenged claim, the construction of any claim term, phrase, or limitation, or any other legal or factual issue.

V. ORDER

Accordingly, it is

ORDERED that, according to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–20 in the '336 patent is instituted on all challenges included in the Petition; and

FURTHER ORDERED that, according to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial that commences on the entry date of this decision.

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