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Paper No. 31
Filed: October 31, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TECHNICAL CONSUMER PRODUCTS, INC., NICOR INC., AMAX LIGHTING, JIAWEI TECHNOLOGY (HK) LTD., JIAWEI TECHNOLOGY (USA) LTD., SHENZHEN JIAWEI PV LIGHTING CO., LTD., LEEDARSON LIGHTING CO., LTD., and LEEDARSON AMERICA, INC.,
Petitioner,

v.

LIGHTING SCIENCE GROUP CORP.,
Patent Owner.

Case IPR2017-01287[1]
Patent 8,201,968 B2

Before KEVIN F. TURNER, PATRICK M. BOUCHER, and JOHN A. HUDALLA, *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

[1] IPR2018-00263 and IPR2018-00269 are joined with this proceeding.

I. INTRODUCTION

Technical Consumer Products, Inc., Nicor Inc., and Amax Lighting (collectively, "Petitioner") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1–12, 14–17, and 19–23 ("the challenged claims") of U.S. Patent No. 8,201,968 B2 (Ex. 1001, "the '968 Patent"). Lighting Science Group Corp. ("Patent Owner") acknowledged the filing of the Petition (Paper 6), but did not file a preliminary response. We determined that the information presented in the Petition established that there was a reasonable likelihood that Petitioner would prevail in challenging claims 1–12, 14–17, and 19–23 of the '968 Patent as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, we instituted this *inter partes* review on November 1, 2017, as to all of the challenged claims. Paper 10 ("Dec. on Inst.").

After institution, two additional petitioners sought institution of similar grounds of unpatentability against claims 1–12, 14–17, and 19–23 of the '968 Patent: (1) Jiawei Technology (HK) Ltd., Jiawei Technology (USA) Ltd., and Shenzhen Jiawei Photovoltaic Lighting Co, Ltd. ("Jiawei"); and (2) Leedarson Lighting Co., Ltd., and Leedarson America, Inc. ("Leedarson"). *See* Papers 22, 23. We instituted review of all of the challenged claims and all grounds with respect to both new petitioners and joined the instituted proceedings, i.e., IPR2018-00263 and IPR2018-00269, with the instant proceeding. *Id*. Both new petitioners were joined under specific conditions in "understudy" roles. *Id*.

During the course of trial, Patent Owner filed a Patent Owner Response (Paper 17, "PO Resp."), and Petitioner filed a Reply to the Patent Owner Response (Paper 19, "Pet. Reply"). A consolidated oral hearing with

related Cases IPR2017-01280 and IPR2017-01285 was held on September 6, 2018, and a transcript of the hearing is included in the record. Paper 30 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1–12, 14–17, and 19–23 of the '968 Patent. For the reasons discussed below, we hold that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 5, 9–11, 14, 15, 17, and 19–23 are unpatentable under § 103(a).

A. Related Matters

Additional petitions were filed seeking *inter partes* review of U.S. Patent No. 8,967,844 B2 ("the '844 Patent"), co-pending Case IPR2017-01280, and of U.S. Patent No. 8,672,518 B2 ("the '518 Patent"), co-pending Case IPR2017-01285. Pet. 1. The '518 Patent issued from a continuation-in-part of U.S. Patent Application No. 12/775,310, from which the '968 Patent issued, and '844 Patent issued from a continuation of the '518 Patent.

The '968, '518, and '844 Patents have been asserted in the following proceedings: *Lighting Sci. Grp. Corp. v. Cree, Inc.*, Case No. 6:13-cv-00587 (M.D. Fla. filed Apr. 10, 2013); *Lighting Sci. Grp. Corp. v. Cooper Lighting, LLC*, Case No. 6:14-cv-00195 (M.D. Fla. filed Feb. 6, 2014); *Lighting Sci. Grp. Corp. v. Sea Gull Lighting Prods. LLC*, Case No. 6:16-cv-00338 (M.D. Fla. filed Feb. 25, 2016); *Lighting Sci. Grp. Corp. v. U.S.A. Light & Elec., Inc.*, Case No. 6:16-cv-00344 (M.D. Fla. filed Feb. 26, 2016); *Lighting Sci. Grp. Corp. v. Hyperikon, Inc.*, Case No. 6:16-cv-00343 (M.D. Fla. filed Feb. 26, 2016); *Lighting Sci. Grp. Corp. v. Nicor Inc.*, Case No. 6:16-cv-00413

(M.D. Fla. filed Mar. 10, 2016); *Lighting Sci. Grp. Corp. v. Sunco Lighting, Inc.*, Case No. 6:16-cv-00677 (M.D. Fla. filed Apr. 21, 2016); *Lighting Sci. Grp. Corp. v. Panor Corp.*, Case No. 6:16-cv-00678 (M.D. Fla. filed Apr. 21, 2016); *Lighting Sci. Grp. Corp. v. S E L S, Inc.*, Case No. 6:16-cv-00679 (M.D. Fla. filed Apr. 21, 2016); *Lighting Sci. Grp. Corp. v. EEL Co., Ltd.*, Case No. 6:16-cv-00680 (M.D. Fla. filed Apr. 21, 2016); *Lighting Sci. Grp. Corp. v. Globalux Lighting LLC*, Case No. 6:16-cv-00681 (M.D. Fla. filed Apr. 21, 2016); *Lighting Sci. Grp. Corp. v. Hubbell Inc.*, Case No. 6:16-cv-01084 (M.D. Fla. filed June 22, 2016); *Lighting Sci. Grp. Corp. v. American De Rosa Lamparts, LLC*, Case No. 6:16-cv-01087 (M.D. Fla. filed June 21, 2016); *Lighting Sci. Grp. Corp. v. Titch Indus., Inc.*, Case No. 6:16-cv-01228 (M.D. Fla. filed July 7, 2016); *Lighting Sci. Grp. Corp. v. Tech. Consumer Prods., Inc.*, Case No. 6:16-cv-01255 (M.D. Fla. filed July 13, 2016); *Lighting Sci. Grp. Corp. v. Satco Prods., Inc.*, Case No. 6:16-cv-01256 (M.D. Fla. filed July 13, 2016); *Lighting Sci. Grp. Corp. v. Amax Lighting*, Case No. 6:16-cv-01321 (M.D. Fla. filed July 22, 2016); *Lighting Sci. Grp. Corp. v. Wangs Alliance Corp.*, Case No. 6:16-cv-01320 (M.D. Fla. filed July 22, 2016); *Lighting Sci. Grp. Corp. v. Halco Lighting Techs., LLC*, Case No. 6:16-cv-02188 (M.D. Fla. filed Dec. 21, 2016); *Lighting Sci. Grp. Corp. v. Shenzhen Jiawei Photovoltaic Lighting*, Case No. 6:16-cv-03886 (N.D. Cal. filed July 11, 2016); and *Lighting Sci. Grp. Corp. v. Leedarson Lighting Co.*, Case No. 6:17-cv-00826 (M.D. Fla. filed May 9, 2017). Pet. 1–2; Paper 6, 1–3; Paper 27, 1–3.

Generation Brands LLC previously filed petitions for *inter partes* review of the ’844 Patent and the ’968 Patent in IPR2016-01546 and IPR2016-01478, respectively. Pet. 1. After our decisions to institute *inter*

partes reviews in these cases, both cases were settled and terminated. *See id.*; Paper 6, 1. In addition, Satco Products, Inc., filed petitions for *inter partes* review of the '844 Patent and the '968 Patent in IPR2017-01639 and IPR2017-01638, respectively, where we instituted *inter partes* reviews in these cases, which are still pending.

B. The '968 Patent

The '968 Patent relates to "low profile downlighting for retrofit applications." Ex. 1001, 1:13–14. Figures 5 and 12 of the '968 Patent are reproduced below, with our annotations to Figure 12.

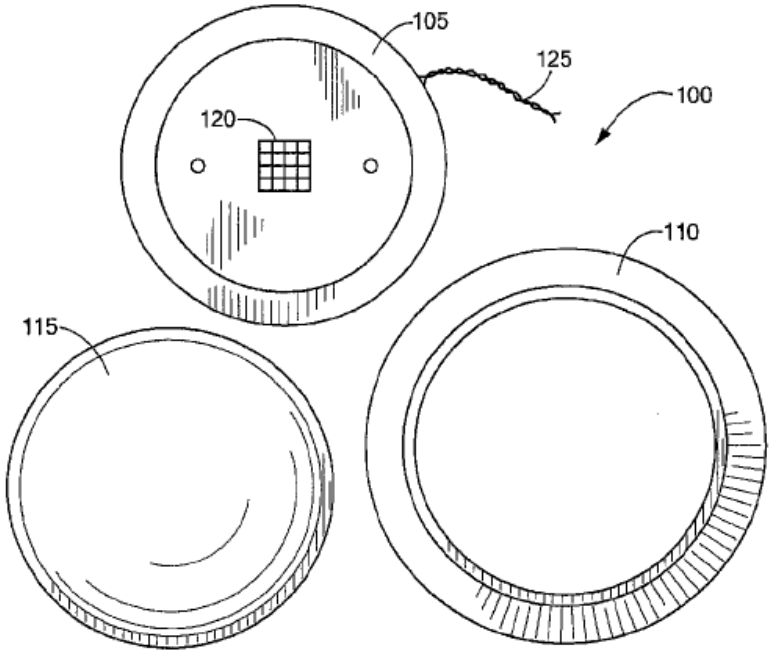

FIG. 5

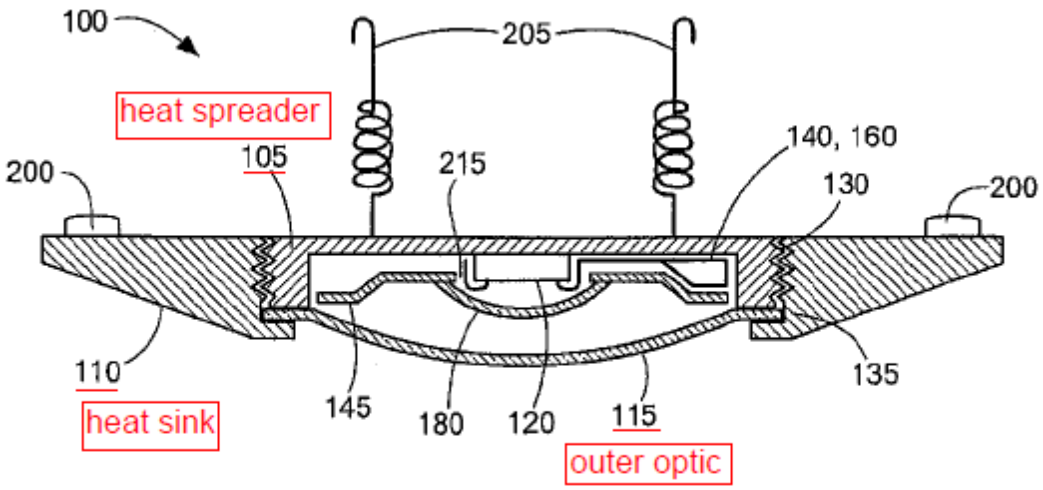

FIG. 12

Figure 5 depicts the separated components of luminaire 100, whereas Figure 12 depicts a section view of assembled luminaire 100. *Id.* at 3:61–4:1, 5:22–26. Luminaire 100 includes heat spreader 105, heat sink 110, outer optic 115, light source 120, and electrical supply line 125. *Id.* at 3:61–4:1. Light source 120, which may be a plurality of LEDs, is disposed in thermal communication with heat spreader 105. *Id.* at 4:34–48. Heat sink 110 is thermally coupled to and disposed diametrically outboard of heat spreader 105. *Id.* at 4:62–65. In addition, outer optic 115 is securely retained relative to at least one of heat spreader 105 and heat sink 110. *Id.* The combination of heat spreader 105, heat sink 110, and outer optic 115 has an overall height H and an overall outside dimension/diameter D such that the ratio of H/D is less than or equal to 0.25 (e.g., when H=1.5 inches and D=7 inches). *Id.* at 4:1–7.

Luminaire 100 may also include a power conditioner. *Id.* at 4:56–58. The power conditioner may be a circuit board having electronic components for receiving alternating current (AC) voltage from supply line 125 and

delivering direct current (DC) voltage to the LEDs. *Id.* at 4:59–65. In one embodiment, the electronics of the power conditioner are contained within a housing to form block-type power conditioner 165, which can be disposed on the back surface of the heat spreader 105. *Id.* at 5:9–21, Fig. 11. In this configuration, block-type power conditioner 165 can be configured and sized to fit within the interior space of an industry-standard nominally sized can-type light fixture or an industry-standard nominally sized wall/ceiling junction box. *Id*.

C. Illustrative Claim

Claims 1 and 20 are the only independent claim of the challenged claims. Independent claim 1 is illustrative of the challenged claims and is reproduced below:

> 1. A luminaire, comprising:
>
> a heat spreader and a heat sink thermally coupled to the heat spreader, the heat sink being substantially ring-shaped and being disposed around and coupled to an outer periphery of the heat spreader;
>
> an outer optic securely retained relative to at least one of the heat spreader and the heat sink; and
>
> a light source disposed in thermal communication with the heat spreader, the light source comprising a plurality of light emitting diodes (LEDs) that are disposed on the heat spreader such that the heat spreader dissipates heat from the LEDs;
>
> wherein the heat spreader, the heat sink and the outer optic, in combination, have an overall height H and an overall outside dimension D such that the ratio of H/D is equal to or less than 0.25;
>
> wherein the combination defined by the heat spreader, the heat sink and the outer optic, is so dimensioned as to: cover an opening defined by

a nominally sized four-inch can light fixture; and, cover an opening defined by a nominally sized four-inch electrical junction box.

Ex. 1001, 10:20–40.

D. Instituted Grounds of Unpatentability

We instituted a trial based on the asserted grounds of unpatentability ("grounds") set forth in the table below. Dec. on Inst. 33.

Reference(s)	**Basis**	**Challenged Claim(s)**
Chou[2]	§ 102	1, 2, 3, 4, 6, 14, and 15
Chou	§ 103	3, 4, and 19–23
Chou and Roberge[3]	§ 103	7, 8, 11, and 12
Chou and Love[4]	§ 103	16
Chou and Wegner[5]	§ 103	17
Soderman[6] and Silescent[7]	§ 103	1, 5, 9, 10, 14, 15, and 19–23
Soderman, Silescent, and Roberge	§ 103	11
Soderman, Silescent, and Wegner	§ 103	17

[2] U.S. Patent No. 7,670,021 B2 (filed May 20, 2008) (issued Mar. 2, 2010) (Ex. 1010, "Chou").
[3] U.S. Patent No. 7,828,465 B2 (filed May 2, 2008) (issued Nov. 9, 2010) (Ex. 1011, "Roberge").
[4] U.S. Patent No. 6,616,291 B1 (filed Dec. 20, 2000) (issued Sep. 9, 2003) (Ex. 1015, "Love").
[5] U.S. Patent No. 7,993,034 B2 (filed Sep. 22, 2008) (issued Aug. 9, 2011) (Ex. 1021, "Wegner").
[6] U.S. Patent No. 7,980,736 B2 (filed Nov. 13, 2007) (issued Jul. 19, 2011) (Ex. 1013, "Soderman").
[7] Silescent Lighting Corp., Silescent S100 LP2 Product Sheet and Installation Guide (Jun. 2009) (Ex. 1014, "Silescent").

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms of an unexpired patent are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2016). Under the broadest reasonable interpretation standard, and absent any special definitions, claim terms are generally given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art, in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

The Petition proposed a single explicit claim construction, i.e., for "integrally formed," recited in claims 2 and 12, and we adopted that explicit claim construction in the Decision on Institution. Dec. on Inst. 8 (citing Pet. 18). During subsequent filing, neither Patent Owner nor Petitioner sought any additional explicit claim constructions. *See* PO Resp.; Pet. Reply. As such, any construction of claim terms occurs below in the context of analyzing whether the prior art renders the claims unpatentable.

B. Principles of Law

Petitioner has asserted each of the challenged claims of the '968 Patent is unpatentable under 35 U.S.C. §§ 102 and/or 103. A claim is unpatentable under 35 U.S.C. § 102 if a single prior art reference expressly or inherently describes each and every limitation set forth in the claim. *See Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005); *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987).

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations).[8] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner cannot satisfy its

[8] In the instant proceeding, Patent Owner has not proffered any secondary considerations with respect to the challenged claims, as noted by Petitioner. *See* Pet. Reply 22–23.

burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

C. Level of Skill in the Art

In determining whether an invention would have been obvious at the time it was made, as well as what would have been considered by skilled artisans in the appropriate period, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham,* 383 U.S. at 17. "The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Petitioner does not appear to discuss explicitly the level of ordinary skill in the art. *See generally* Pet. Petitioner's Declarant, Dr. Coleman, opines that "[a person of ordinary skill] in the field of LED luminaire design as of October, 2009, would have had at least a bachelor's degree in either mechanical engineering, electrical engineering, or physics and at least 3–4 years of experience designing light fixtures." Ex. 1002 ¶ 22.

Patent Owner cites to its own declarant, Dr. Bretschneider, who states that a person or ordinary skill in the art in the relevant period "would have at least a B.S. degree or equivalent in electrical engineering, mechanical engineering, chemical engineering, physics, or a related field and at least 2-3 years of experience in designing LED lighting products or fixtures." PO Resp. 4 (citing Ex. 2001 ¶¶ 22–23). Although the declarants' opinions are not identical, they generally overlap and do not create important points of distinction.

The parties' definitions of the level of skill differ in minor respects, including the number of years of experience and whether or not a background in chemical engineering should be included. At his deposition, Dr. Bretschneider testified that he included a degree in chemical engineering in his definition because that degree confers expertise in heat transfer. Ex. 1024, 37:14–22. We find this testimony persuasive. Regarding the difference in years of experience, both declarants agree that three years of experience is appropriate. For these reasons, we define the person of ordinary skill in the art as having a bachelor's degree in electrical engineering, mechanical engineering, chemical engineering, physics, or a related field and three years of experience in designing LED lighting products or fixtures. We are satisfied that this definition comports with the qualifications a person would have needed to understand and implement the teachings of the '968 Patent and the prior art of record. We also note that the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Anticipation by Chou

Petitioner contends claims 1–4, 6, 14, and 15 of the '968 Patent are anticipated under 35 U.S.C. § 102 by Chou. Pet. 19–28. Petitioner explains how each element of independent claim 1 and the specified dependent claim is disclosed in Chou. *Id.* Petitioner also relies upon the Declaration of Dr. Coleman to support its positions. Ex. 1002 ¶ 62. In its Patent Owner Response, Patent Owner argues that Chou does not disclose all of the limitations of independent claim 1, nor claims 2–4, 6, 14, and 15 dependent

thereon. PO Resp. 4–18. Patent Owner relies upon the Declaration of Dr. Bretschneider to support its positions. Ex. 2001 ¶¶ 31–33, 42–54, 99–103.

We begin our analysis with an overview of Chou, and then we address the parties' contentions with respect to the claims at issue in this asserted ground.

1. Chou Overview

Chou is a U.S. patent directed to "a recessed light fixture having a thermally effective trim." Ex. 1010, 1:16–18. Figures 2a and 2b of Chou are reproduced below.

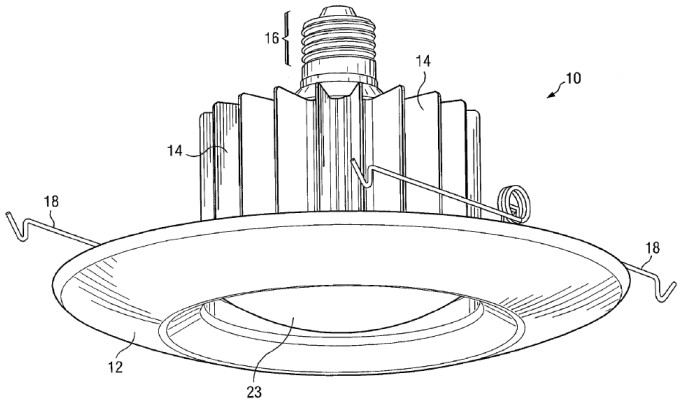

FIG. 2a

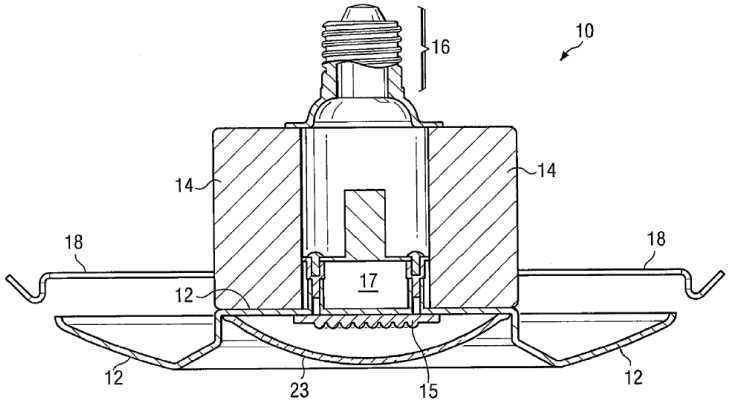

FIG. 2b

Figures 2a and 2b depict perspective and cross-sectional views, respectively,

of "a recessed can light fixture including a thermally conductive trim and heatsink for redistributing heat." *Id.* at 3:1–6. Fixture 10 includes light source 15, which can be "a light engine that includes a plurality of LEDs." *Id.* at 4:15–17, 8:53–54. Light source 15 is mounted on a front surface of trim 12, into which heat from light source 15 is transferred. *Id.* 4:15–16, 7:45–47. Heat is subsequently transferred both to flange portion 22 of trim 12 and to heatsink 14. *Id.* at 7:45–47, 7:63. "Although some heat is vented into the recessed housing via heatsink 14, a majority of heat is dissipated from trim 12 outside the housing." *Id.* at 5:8–10, 7:14–19.

Fixture 10 also includes optical lens 23 and electrical socket 16 for connecting the light source to an electricity source. *Id.* at 4:17–18, 8:17–23. In addition, an AC-to-DC converter circuit may be connected between socket 16 and the light source, and the conversion circuit can include circuit board 17. *Id.* at 4:22–27.

2. Independent Claim 1

In its analysis for claim 1, Petitioner maps "the interior portion of [Chou's] trim 12" to the recited "heat spreader" of claim 1. Pet. 19–20 (citing Ex. 1010, 7:44–46; 7:63–8:1, Figs. 2b, 4a, 4b). Petitioner also maps Chou's flange portion 22 of trim 12 to the recited "heat sink." *Id.* at 20 (citing Ex. 1010, 5:1–5, 7:63–8:3, Fig. 4a). Regarding the requirement that the heat sink is "substantially ring-shaped" and "is disposed around and coupled to an outer periphery of the heat spreader," Petitioner contends Chou teaches that outer flange portion 22 of trim 12 is ring-shaped and is part of the same piece of metal. *Id.* at 21 (citing Ex. 1010, 2:54–55, 7:23–26, 50–51, Figs. 2b, 4a, 4b).

For the recited "outer optic," Petitioner cites Chou's lens 23, which "is attached to trim 12 using a friction coupling, adhesive, or a fastener." *Id.* at 22 (quoting Ex. 1010, 8:16–23, citing *id*. at Fig. 2b). Petitioner also cites Chou for teaching an LED light source that is in thermal communication with trim 12. *Id.* at 22–23 (citing Ex. 1010, 4:14–17, 8:44–48, 53–54, 62–64, Fig. 2b).

With respect to the limitation that "the heat spreader, the heat sink and the outer optic, in combination, have an overall height H and an overall outside dimension D such that the ratio of H/D is equal to or less than 0.25," Petitioner cites Chou's description that "trim 12 includes a thermally conductive material such as aluminum, and has an outer diameter of 200 mm, an inner diameter of 130 mm and a depth of 42 mm." *Id.* at 23 (quoting Ex. 1010, 5:24–27, citing *id*. at Fig. 4a). Petitioner characterizes this 42 mm depth as being "the trim depth protruding from the ceiling surface" and contends it is "used in all the subsequent calculations of heat dissipation by the trim." *Id.* (citing Ex. 1010, 5:27–28). Based on these figures, Petitioner argues Chou's "height to diameter (H/D) ratio is 42/200 = 0.21, which is less than 0.25." *Id.*

Additionally, claim 1 recites that the combination of the heat spreader, the heat sink and the outer optic is dimensioned to cover an opening of a nominally sized four-inch can light fixture or electrical junction box. Petitioner asserts that Chou teaches that the fixture is drawn up against the ceiling and is "configured to install into both conventional 12.7 cm (5-inch) and 15.24 cm (6-inch) recessed can housings." *Id*. at 24 (quoting Ex. 1010, 3:65–66, citing *id*. at 4:46–54). Petitioner additionally asserts that a person

of ordinary skill in the art would have recognized that if Chou's heat spreader, heat sink, and outer optic cover a 5-inch can, they also would be "dimensioned as to[] cover" the opening defined by a four-inch can and a four-inch electrical junction box. *Id.* (citing Ex. 1002 ¶ 62).

In its Patent Owner Response, Patent Owner presents arguments disputing that Chou discloses all of the limitations of independent claim 1. *See* PO Resp. 4–14. Petitioner responds to those arguments in its Reply. *See* Pet. Reply 3–6. We address these arguments below.

Patent Owner raises several arguments against the anticipation ground over Chou applied to independent claim 1 (PO Resp. 4–14), but we need address only a single argument to determine whether Chou anticipates claim 1. Patent Owner argues that Chou does not disclose the H/D limitation recited in claim 1 because one of ordinary skill in the art would have understood that the "heat sink" of Chou would encompass both the "trim 12" and the "heatsink 14." *Id*. at 6. Patent Owner points out that Chou discloses that "circuit board 17 [is] mounted within heatsink 14," "[i]n such a configuration, heatsink 14 facilitates the removal of heat energy from both trim 12 and circuit board 17." *Id*. at 7 (citing Ex. 1010, 4:26–30). Patent Owner argues that "[t]he anticipation determination is [made] from the point of view of those skilled in the art." *Id*. at 11 (citing *Impax Labs., Inc. v. Aventis Pharm. Inc.*, 468 F.3d 1366, 1381 (Fed. Cir. 2006)). With consideration of the heatsink 14 of Chou, the light fixture therein would not satisfy the H/D limitation recited in claim 1. Patent Owner lastly argues that Chou can only be anticipatory through the complete removal of the heatsink 14, which is impermissible. *Id*. at 12–14.

In reply, Petitioner asserts that including Chou's heatsink 14 amounts to a "specious argument." Pet. Reply 4. Petitioner asserts that the "comprising" language used in claim 1 connotes that "other elements may be added and still form a construct within the scope of the claim." *Id*. (quoting *Sevenson Envtl. Servs., Inc. v. United States*, 76 Fed. Cl. 51, 73–74 (2007) (citing *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997)). Petitioner argues that it is "immaterial to the anticipation analysis that Chou includes a heat dissipation structure in addition to the trim 12 including the flange portion 22." *Id*.

"Because the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—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.'" *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). In this case, the arrangement of heat sinking elements disclosed in Chou includes both trim 12 and heatsink 14. *See* Ex. 1010, 5:8–17, 7:11–16. Yet Petitioner's anticipation contentions can only reach the H/D limitation by altering Chou's heat sinking arrangement such that heatsink 14 is removed from the height calculation. *See* Pet. 20–21, 23 & n.13. In this sense, Petitioner's anticipation contentions depart from the arrangement in Chou. Thus, we agree with Patent Owner (PO Resp. 8–14) that Chou cannot anticipate the claim because it does not disclose the elements of claim 1 "arranged as in the claim." *Net MoneyIN*, 545 F.3d at 1369.[9]

[9] We further agree with Patent Owner that this is not an instance where Chou

Patent Owner also cites to a case from the Court of Appeals for the Federal Circuit, namely *In re Chudik*, 851 F.3d 1365, 1374 (Fed. Cir. 2017). PO Resp. 8, 13–14. We agree that the case is illuminating in considering the instant ground of unpatentability. The claim at issue in that case was an apparatus claim and used "comprising" language, but the only way to "arrange" the prior art reference to meet the engagement requirement was to "remove[] [an] element" from the prior art. *Chudik*, 851 F.3d at 1373–74. The Federal Circuit stated, "[p]rior art that must be distorted from its obvious design does not anticipate a new invention." *Id.* at 1374 (quotation omitted). The Federal Circuit also noted that no party described how the engagement requirement could be met without "tearing the invention apart." *Id.* Additionally, as Patent Owner notes, Petitioner has not demonstrated that Chou would necessarily be functional, as disclosed, without the use of heatsink 14. PO Resp. 10–14.

In addition, our determination is consistent with the fact that a reference equivalent to Chou was originally considered by the Examiner in the prosecution, where it was applied as an anticipatory reference. PO Resp. 5 (citing Pet. 7 n.8); *see also* Ex. 1008, 8 (where original claims 1–3, 7–10, and 17–20 were rejected as being anticipated by Chou (U.S. Patent Publication No. 2009/0086474)). Claim 1 was subsequently amended with respect to the heat sink limitation (Ex. 1008, 2) and thereafter allowed by the Examiner (Ex. 1009, 5).

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discloses "additional, unrecited elements," or "elements not recited in the claim." PO Resp. 12 (quoting *Free Motion Fitness, Inc. v. Cybex Int'l, Inc.*, 423 F.3d 1343, 1353 (Fed. Cir. 2005); *Gilette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1371–72 (Fed. Cir. 2005)).

Based on the discussion above, we determine that Petitioner has not demonstrated by a preponderance of the evidence that the subject matter of independent claim 1 is anticipated by Chou.

3. Dependent Claims 2–4, 6, 14, and 15

Petitioner argues that Chou discloses the limitations recited in challenged dependent claims 2–4, 6, 14, and 15. Pet. 24–28. With respect to each of these dependent claims, Petitioner relies on its analysis of claim 1 and the disclosure of Chou. As we determine that Chou fails to anticipate all of the elements of claim 1, it therefore fails to anticipate all of the elements of dependent claims 2–4, 6, 14, and 15. Therefore, Petitioner has not demonstrated by a preponderance of the evidence that the subject matter of dependent claims 2–4, 6, 14, and 15 is anticipated by Chou.

E. Obviousness over Chou, Roberge, Love, and Wegner

Petitioner contends claims 3, 4, and 19–23 of the '968 Patent would have been obvious over Chou, that claims 7, 8, 11, and 12 would have been obvious over Chou and Roberge, that claim 16 would have been obvious over Chou and Love, and that claim 17 would have been obvious over Chou and Wegner. Pet. 30–45. Each of these grounds depends on the anticipation analysis applied to claim 1, but there is no discussion of the obviousness of all of the elements of independent claims 1 and 20 in view of Chou.[10]

[10] At Oral Heating, Petitioner asserted that a portion of the Petition argues that elements of the independent claims were obvious over Chou, specifically pointing to pages 34 and 35 of the Petition. Tr. 51. We note, however, this obviousness assertion is in regard to the dimensional limitation of the power conditioner, recited in independent claim 20, and not made

As discussed above, we determine that the Petition's analysis of the H/D limitation of claim 1 is not persuasive, such that we do not find that Chou anticipates that element. The Petition contains no discussion of or obviousness rationale for excluding the heatsink of Chou to meet the limitations of independent claim 1, i.e., the "ratio of H/D," nor the similar limitations recited in independent claim 20. *See* Pet. 30–45. Therefore, Petitioner has not demonstrated by a preponderance of the evidence that the subject matter of dependent claims 3, 4, 7, 8, 11, 12, 16, 17, 19, and 21–23 would have been obvious over the combined teachings of Chou, Roberge, Love, and Wegner.

F. Obviousness Over the Combined Teachings of Soderman, Silescent, Roberge, and Wegner

Petitioner contends that (1) claims 1, 5, 9, 10, 14, 15, and 19–23 of the '968 Patent would have been obvious in view of Soderman and Silescent, (2) claim 11 would have been obvious over Soderman, Silescent, and Roberge, and (3) claim 17 would have been obvious over Soderman, Silescent, and Wegner. Pet. 45–63. In its Patent Owner Response, Patent Owner contends that Petitioner has not demonstrated that Silescent is a prior art printed publication in accordance with 35 U.S.C. § 311(b). PO Resp. 38–45. Patent Owner also raises arguments against this ground with respect to specific dependent claims, i.e., claims 9, 19, and 22. *Id*. at 45–49.

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with respect to the "a heat spreader and a ring-shaped heat sink thermally coupled to and disposed diametrically outboard of the heat spreader," where Petitioner relies the same analysis as applied to independent claim 1, discussed above.

We begin our analysis with brief overviews of Soderman, Silescent, Roberge, and Wegner, and then we address the parties' contentions with respect to the claims at issue in this asserted ground.

1. Soderman Overview

Soderman is a U.S. patent directed to "a light fixture assembly comprising an illumination assembly incorporating a light emitting diode (LED) array electrically connected to a source of electrical energy by a conductor assembly segregated from conductive transfer to a heat sink portion of the light fixture." Ex. 1013, 1:8–12. Figure 1 of Soderman is reproduced below:

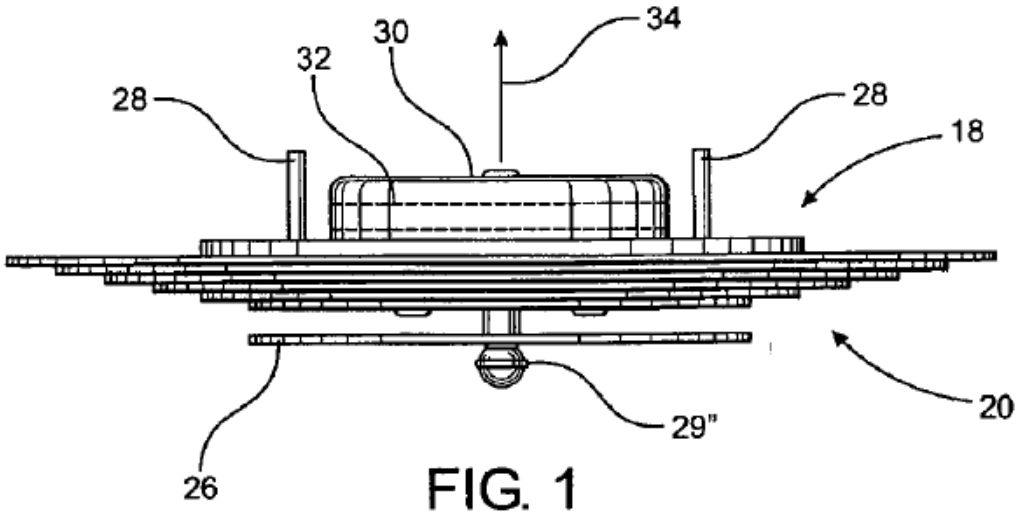


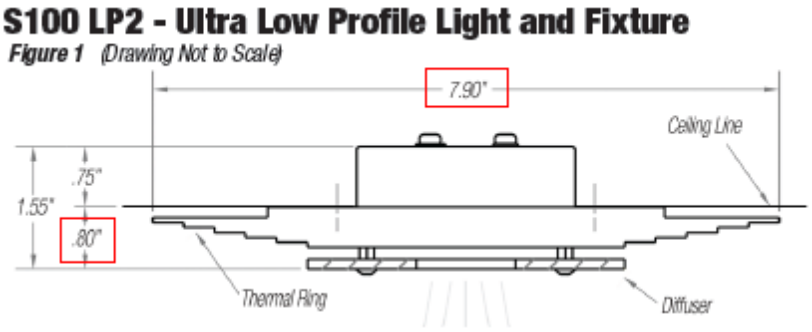
FIG. 1

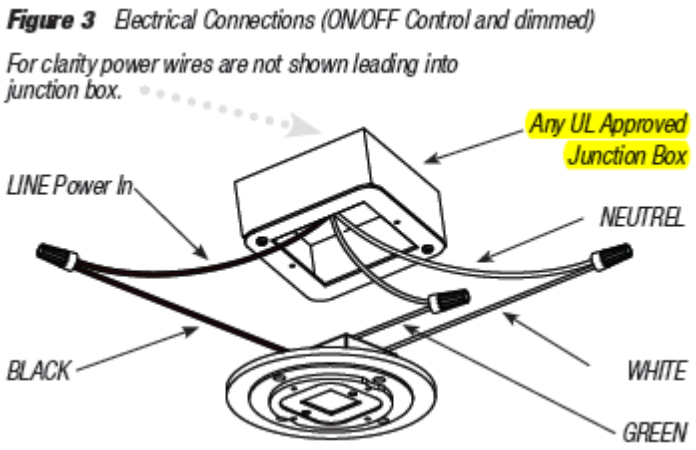
Figure 1 of Soderman illustrates housing 30, which can be an enclosure or a junction box, connected to mounting assembly 18, which can be a plate or a disk. *Id*. at 6:21–24, 8:5–10. Cover structure 20, formed of a conductive material and capable of heat conduction through its structure, is in contact with mounting assembly 18 to efficiently transfer heat from the illumination assembly to the mounting assembly to the cover structure. *Id*.

at 6:46–59, 7:36–41. The illumination assembly may comprise one or more LEDs connected to electrical control circuity, where the latter can be a printed circuit structure. *Id*. at 6:13–20. The light fixture assembly can also include light shield 26, formed of a transparent and/or translucent material. *Id*. at 7:54–58. Soderman describes mounting the fixture to the housing or junction box using, *inter alia*, connectors passing through "appropriately disposed and dimensioned apertures" in a mounting assembly. *Id.* at 8:1–13, 9:15–34.

2. Silescent Overview

Silescent is product literature and installation instructions for a dimmable light, i.e., Silescent S100LP2. Ex. 1014. Petitioner provides the declaration of Mr. Daryl Soderman, who testifies that Silescent is a true and accurate copy of the product sheet and installation guide for the indicated product that were made available to the public at least as early as June 2009, and were typically distributed. Ex. 1003 ¶¶ 3–4. Figures 1 and 3 from Silescent, as annotated by the Board, are reproduced below:





Ex. 1014, 2, 4.

The annotated version of Figure 1 illustrates that the height of the fixture below the ceiling line, including mounting assembly, cove and light shield, is 0.80 inches and the fixture has a diameter of 7.90 inches, thus providing a height/diameter ("H/D") ratio of 0.101. The annotated version of Figure 3 illustrates that the fixture can, in part, be received by "any UL approved junction box," with power being received from household AC voltage.

3. Roberge Overview

Roberge is directed to LED-based lighting fixtures suitable for general illumination in surface-mounted installations where the heat dissipation properties of the fixtures are improved by decreasing the thermal resistance between the LED junctions and the ambient air. Ex. 1011, Abs. The fixture is illustrated in Figure 3B of Roberge and is reproduced below, with added annotations:

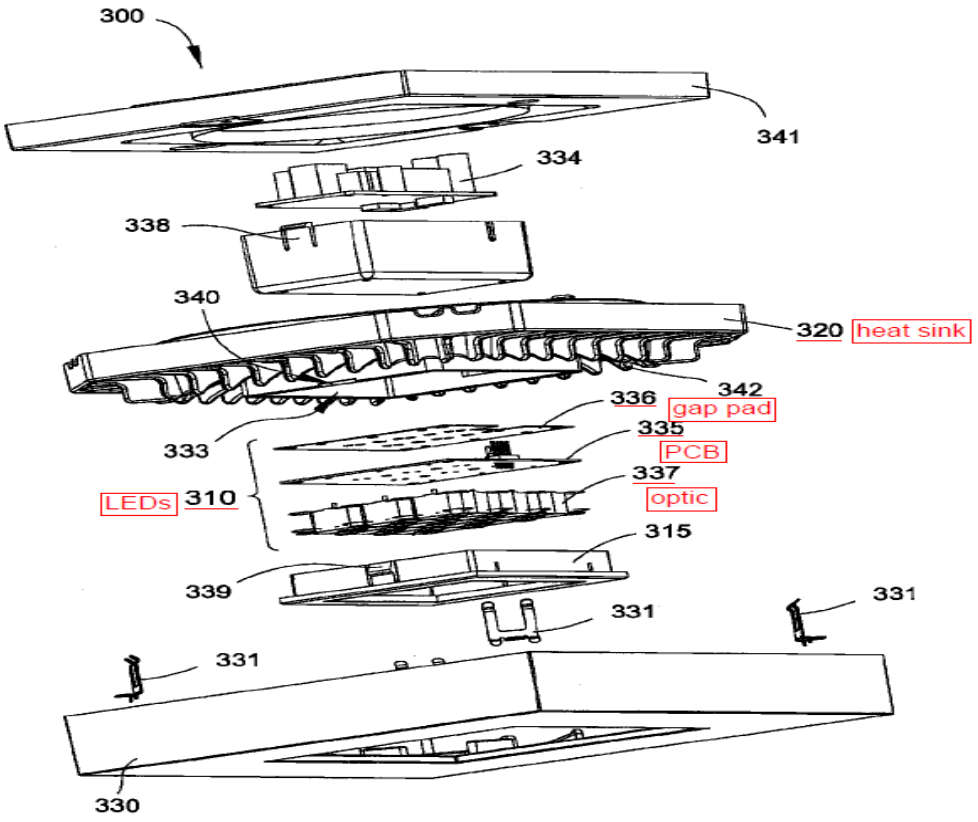


FIG. 3B

Ex. 1011, Fig. 3B. Annotated Figure 3B of Roberge illustrates an outer portion of heat sink 320, which can be equivalent to the claimed "heat sink," and an inner portion of the same, which can be equivalent to the claimed "heat spreader." *Id*. at 22:39–40. The LED module 310 comprises gap pad 336, printed circuit board 335, and optic 337 connected to heat sink 320, with cover lens 315 and bezel plate 330 defining the overall structure of the fixture. Ex. 1011, 22:65–23:53. In addition, Roberge discloses that optic 337 may be "polycarbonate reflector optics 337 with a vacuum-metalized reflective coating for collimating the light." *Id*. at 23:33–36.

4. Wegner Overview

Wegner is directed to recessed light fixture having an LED light source and a reflector. Ex. 1021, Abs. The fixture has an Edison base adaptor that allows for mounting into an existing recessed can light fixture. *Id*. at Figs. 14–16. In one embodiment, "a reflector housing 320 is coupled to the bottom surface 310a of the heat sink 310," with the reflector housing being configured to receive a reflector composed of a material for reflecting light emitted by the LED. *Id*. at 8:1–2, 16–18, 33–35, Fig. 12.

5. Claims 1, 15, 19, and 20

With respect to claim 1, Petitioner asserts that Soderman's mounting assembly 18 is equivalent to the claimed "heat spreader," and the cover structure 20 is equivalent to the claimed "heat sink." Pet. 45. Petitioner further asserts that cover structure 20 is round with a hole through the center, and it is disposed and coupled to the outer periphery of the mounting assembly. *Id.* at 46–47. Petitioner asserts that the light shield is bolted to the heat spreader, and that Soderman's LEDs are in thermal communication with the heat spreader. *Id.* at 48–49.

With respect to the dimensional limitations of claim 1, Petitioner cites to the teachings of Silescent, and argues it would have been obvious to implement the lighting device of Soderman with the dimensions provided in Silescent as Silescent represents a manufactured embodiment of Soderman. *Id.* at 49–50. Additionally, that implementation has a diameter of 7.90 inches, which Petitioner asserts would have covered a 4-inch box or 4-inch can, per claim 1. *Id.* at 50 (citing Ex. 1002 ¶ 139).

With respect to claim 15, Petitioner argues that it would have been obvious to one of ordinary skill in the art to add a power conditioner to the

lighting device of Soderman based on Silescent. *Id.* at 53–55. Petitioner argues that Silescent discloses an AC/DC power conditioner located on the top side of the light fixture base, because it receives AC power and sends power to the LEDs which are typically driven by lower voltage DC. *Id.* at 53–54 (citing Ex. 1014, Fig. 3; Ex. 1002 ¶¶ 151–152).

With respect to claim 19, Petitioner again argues that Silescent discloses an AC/DC power conditioner, and that it would have been obvious to select an appropriately-sized AC/DC power conditioner capable of fitting inside a 4-inch can or electrical junction box, as disclosed in Silescent. *Id.* at 55–57 (citing Ex. 1014, 4, Figs. 3, 5; Ex. 1002 ¶¶ 162–163; Ex. 1003 ¶ 6).

With respect to claim 20, Petitioner relies on the analysis of Soderman and Silescent provided with respect to claims 1, 15, and 19. *Id*. at 57–59.

In its Patent Owner Response, Patent Owner disputes that Petitioner has demonstrated Soderman and Silescent teach or suggest all the limitations of claims 1, 5, 9, 10, 14, 15, and 19–23. *See* PO Resp. 38–49. We address these arguments below.

a. Patent Owner's Arguments

Patent Owner argues that Silescent does not qualify as a prior art printed publication. PO Resp. 38–45. In the Institution Decision, we preliminarily determined that Petitioner made "a sufficient showing that Silescent is a printed publication, within the meaning of 35 U.S.C. § 102, and available as part of a ground of review under 35 U.S.C. § 311(b)." Dec. on Inst. 28. We revisit that determination based on the arguments of Patent Owner and Petitioner, and taking into account the record developed during trial, and consider whether Petitioner has demonstrated, by a preponderance

of the evidence, that Silescent is a printed publication, within the meaning of 35 U.S.C. § 102.

Patent Owner points out that the installation guide portion of Silescent describes the S100 LP2 product through the inclusion of "Patents Pending." PO Resp. 41. Patent Owner argues that although no patents covering the S100 LP2 product were granted as of June 2009 (i.e., the latest date ascribed by Mr. Soderman), a patent application covering that product was pending at that time. *Id*. Patent Owner contrasts this with the Silescent product sheet, which multiple times indicates that "multiple patents [had been] secured." *Id*. at 42 (citing Ex. 1014, 1). Patent Owner asserts that no relevant patent was issued by June 2009, arguing that Mr. Soderman's testimony confirmed the same, such that "the document itself strongly indicates that it was not in existence prior to the critical date." *Id*. at 43 (citing Ex. 2004, 29:16–19). Also, based on remarks made in Mr. Soderman's deposition, Patent Owner argues that his declaration is speculative and insufficient to demonstrate that the Silescent product sheet was in existence or publicly available in June 2009. *Id*. at 42–43 (citing Ex. 2004, 39:20–21, 41:20–24, 59:14–15).

With respect to the ground of unpatentability, Patent Owner points out that the ground relies mostly on the disclosure of the Silescent product sheet, where the published nature of the Silescent installation guide, having a copyright notice, is not explicitly disputed. PO Resp. 44. As such, Patent Owner argues that, in the Institution Decision, "the Board rest[ed] its public accessibility determination for the Silescent product sheet only on Mr. Soderman's testimony, which is inconsistent with the statements on the face of the document itself." *Id*. Patent Owner argues that a bare statement, such as in this proceeding, is not sufficient to show public accessibility. *Id*. at 44–

45 (citing *Cisco Systems v. Constellation Techs.*, Case IPR 2014-01085, slip op. at 9 (PTAB Jan. 9, 2015) (Paper 11); *Square, Inc. v. Unwired Planet, LLC*, Case CBM 2014-00156, slip op. at 17 (PTAB Dec. 24, 2014) (Paper 11)). Patent Owner concludes that because the relevant portions of Silescent have not be shown to be a printed publication as of the critical date, it cannot be used to show unpatentability of claims under 35 U.S.C. § 311(b). *Id*. at 44.

Petitioner replies that Mr. Soderman's testimony supports Silescent being considered a printed publication with respect to the subject claims. Pet. Reply 13–18. Mr. Soderman testified that the Silescent product sheet and installation instructions for the S100LP2 product were available to the public by June 2009, and that that it was his company's standard practice to send out the product sheet and installation instructions not only with products that had been sold but also to potential clients in the months leading up to the first sale of the S100LPS product in July 2009. Ex. 2004, 19:19–20:2; 52:10–55:7. Further, Mr. Soderman indicated that he was not aware of situations where the installation guide and specification sheets were not both provided along with the product or products sample. *Id*. at 15:3–15. Petitioner asserts that those interested in LED light fixtures would have been able to find the Silescent product sheet, because Mr. Soderman's company was engaged in an effort to market and sell the product so those interested in the product would have been able to gain access to these documents. Pet. Reply 14 (citing Ex. 2004, 18:8–13; 42:7–13). Petitioner also argues that an invoice dated July 2009 from Mr. Soderman's company acts as corroboration of his testimony. *Id*. at 15–16 (citing Ex. 2004, 85).

The determination of whether a given reference qualifies as a prior art "printed publication" involves a case-by-case inquiry into the facts and circumstances surrounding the reference's disclosure to members of the public. *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004). The key inquiry is whether the reference was made "sufficiently accessible to the public interested in the art" before the critical date. *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989); *In re Wyer*, 655 F.2d 221, 226 (CCPA 1981). "A given reference is 'publicly accessible' upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it." *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006). Further, if accessibility is proved, "there is no requirement to show that particular members of the public actually received the information." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988).

The declaration from Mr. Soderman may be used as evidence of his company's routine business practice supporting the publication of Silescent. *See Swindell Dressler Int'l Co. v. Travelers Cas. & Sur. Co.*, 827 F.Supp. 2d 498, 502 (W.D. Pa. 2011); *see* Fed. R. Evid. 406, 803, and 902; *see also, e.g., Envirex, Inc. v. Ecological Recovery Assocs., Inc., et al.*, 454 F.Supp. 1329, 1333 (M.D. Pa. 1978) ("[E]vidence of the routine practice of an organization, *whether corroborated or not,* is relevant to prove that the conduct of the organization in a particular occasion was in conformity with the routine practice") (emphasis added); American Jurisprudence Proof of Facts; Second Series, 35 POF 2d 589 ¶¶ 1–11 (1983). The probative value of routine business practice to show the performance of a specific act has

long been recognized. *In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986) (citations omitted). "Evidence of routine business practice can be sufficient to prove that a reference was made accessible before a critical date." *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988).

We credit Mr. Soderman's testimony as showing the routine general business practice of his company in the relevant period included the distribution of the Silescent product sheet. Ex. 1014 ¶ 4; Ex. 2004, 52:10–17. Mr. Soderman also testifies that it would have been a normal business practice at the time to provide samples or demos of fixtures. Ex. 2004, 52:22–53:24. Mr. Soderman also testifies that:

> [the inclusion of installation guide] would have been critical for many different reasons and again depending upon the nature of the call or communications happening at the time and who we were speaking with but with any demo that we would provide the installation instruction *as well as the spec sheet is vital* so that once we leave communication with whomever we left it with they would have some materials for which their colleagues as well as their end customers perhaps if it wasn't the end customer would take up communication and be able to effectively communicate that, the specifications and the properties as well as the mounting.

Ex. 2004, 54:5–16 (emphasis added). Mr. Soderman's testimony is also supported by the inclusion and discussion of a specific invoice (*id*. at 85), where discussion of that invoice encompassed a large portion of his deposition. *See id*. at 19:12–20:10, 41:7–13, 43:6–46:15, 55:19–56:7. Mindful of the preponderance standand that applies to this proceeding, we find that the invoice sufficiently corroborates Mr. Soderman's testimony as to activity of his company in the relevant period of June 2009, illustrating

the date on which the ordinary business practice occurred. Although Patent Owner characterizes Mr. Soderman's declaration as "speculative" (PO Resp. 43), we find that it is sufficient evidence to demonstrate the existence and distribution of Silescent, with respect to both the installation guide and the product sheet.

With respect to Patent Owner's arguments that the Silescent product sheet details that "multiple patents [had been] secured," but no patents covering the fixture had been issued (PO Resp. 41–42), we find persuasive Mr. Soderman's testimony that the product sheet was created without legal review. Ex. 2004, 16:17–18:7. We also concur with Petitioner when it states that "it's understandable that a layperson who is not a lawyer getting a notice of allowance when the examination on merits is completed and there are still administrative actions that need to be followed, that that person would think that they have obtained a patent." Tr. 16:22–17:3. Additionally, as Petitioner points out, Silescent Lighting Corporation received notices of allowance of two design patents in June 2009, such that those patents could arguably be the patents covered by the "multiple patents secured" mentioned in the Silescent product sheet, particularly given the ambiguity of the imprecise word "secured."

We now address the specific cases cited by Patent Owner. *Cisco Systems* was concerned with "an Internet-Draft, which was 'valid' for only a limited time and was deemed inappropriate for citation." *Cisco Systems*, slip op. at 8. Unlike the draft in *Cisco Systems*, the Silescent product sheet is not a transitory document; Mr. Soderman's testimony establishes *when* it was made available, not whether it was *ever* available for a sufficient period. Likewise, in *Square*, we were concerned with the veracity of a supplied

publication date and confidentiality issues raised in the document itself. *Square*, slip op. at 18–19. Those issues are not present in this proceeding. Specifically, the trial record raises no issues of confidentiality, nor does it raise doubts with respect to the date provided in the Silescent installation guide, where evidence of record demonstrates that the portions were circulated to the public together.

Patent Owner also argues that the facts here are similar to a prior Board decision finding no evidence of public accessibility. PO Resp. 43–44 (citing *Hewlett-Packard Co. v. U.S. Philips Corp.* Case IPR2015-01505, slip op. at 9 (PTAB Jan. 19, 2016) (Paper 16)). In *Hewlett-Packard Company v. U.S. Philips Corporation*, a document including a specific date was not found to be sufficiently publicly accessible to qualify as prior art because it included other information within the document itself that was inconsistent with the specific date. *Id*. Petitioner replies that the document in *Hewlett-Packard* cited a paper published after the specific date, and the petitioner in that case provided no evidence showing that the document was available to the public, nor explained the date discrepancies. Pet. Reply 18. Petitioner contrasts *Hewlett-Packard* with the instant proceeding insofar as Mr. Soderman's testimony is corroborated by a sale invoice and the Silescent product sheet itself has no temporal inconsistencies. *Id*. We agree with Petitioner that the facts of *Hewlett-Packard* are distinguishable from the instant case.

It is also relevant that we have previously found similar materials to be publicly available. *See L&P Property Management Co. v. National Prods. Inc.*, Case IPR2016-00475, slip op. at 23 (PTAB July 19, 2017) (Paper 27)). In that case we determined that testimony supported that

instructions were shipped with the product, where that testimony also addressed the normal business practices of the company doing the shipping and included "contemporaneous invoices substantiating the shipment." *Id*. Based on the evidence presented and considered during this trial, we determine that Silescent qualifies as a prior art printed publication under 35 U.S.C. § 102.

With respect to claim 19, Patent Owner also argues that Petitioner provides no evidence or argument as to how Soderman could or would be installed into any can light fixture, much less the claimed 4-inch version. PO Resp. 48–49. Petitioner points out, however, that claim 19 does not require an Edison base as the connection mechanism, and that "Petitioners' arguments and Dr. Coleman's declaration directly address this issue." Pet. Reply 20. We agree with Petitioner that the Petition establishes one of ordinary skill in the art would have selected a power conditioner of the appropriate size, i.e., to fit in both a 4-inch can and a junction box. *See* Pet. 55–56 (citing Ex. 1002, ¶¶ 162–163). Thus, we are not persuaded by Patent Owner's argument regarding claim 19, and determine that Petitioner's analysis teaches or suggests all of the limitations of claim 19.

As such, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that Silescent is a printed publication, within the meaning of 35 U.S.C. § 102, and available as part of a ground of review under 35 U.S.C. § 311(b). We also determine that Petitioner has demonstrated that Soderman and Silescent teach or suggest all of claims 1, 15, 19, and 20.

b. Summary

Therefore, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of dependent claims 1, 15, 19, and 20 would have been obvious over the combined teachings of Soderman and Silescent.

6. Claims 5, 9–11, 14, 17, and 21–23

With respect to claim 5, Petitioner asserts that Soderman provides mounting holes that are suitably spaced to permit fasteners 28 to secure the fixture to the junction box 30. Pet. 50–51 (citing Ex. 1013, Figs. 1, 6).

With respect to claim 9, Petitioner argues that Soderman discloses an outer optic that is secured relative to at least one of the heat spreader and the heat sink via fasteners, and that one of ordinary skill in the art would have been motivated to place the trim ring onto the outer optic in a snap-fit arrangement to allow for assembly and to cover the fasteners. *Id.* at 51–52 (citing Ex. 1013, 8:1–4; Ex. 1002 ¶ 146).

With respect to claim 11, Petitioner argues that Soderman does not disclose an "inner" optic, but that it would have been obvious to add a second, additional, "inner" optic to the existing light shield, as disclosed in Roberge. *Id.* at 61–62. Petitioner contends that a person of ordinary skill in the art would have recognized that an additional optic, as taught in Roberge, could be added to Soderman because such an optic would provide the same function as the inner optic of Roberge and would yield the predictable and desirable result of modifying the raw light from the LED. *Id.* (citing Ex. 1002 ¶ 183).

Dependent claim 14 recites, in part "at least some of the LEDs are connected to a circuit board, the circuit board being disposed substantially

flat on the heat spreader inside a recessed portion of the heat sink." Petitioner contends that Soderman discloses LEDs connected to a circuit board and disposed on the heat spreader inside a recessed portion of the heat sink. *Id*. at 53. Soderman discloses that illumination assembly 12 "compris[es] one or more light emitting diodes 14 connected to electrical control circuitry 16," where the latter circuit is preferably a printed circuit board. Ex. 1013, 6:15–18. The cover 20 contains hole 24, such that the hole creates a "recess" in the heat sink, and the LED is mounted on the heat spreader and tucked just below the recessed opening so that "the light generated by the one or more light emitting diodes 14 pass through the opening 24." *Id*. at 7:49–50, Fig. 5.

With respect to claim 17, Petitioner argues that although Soderman does not disclose a "reflector," it would have been obvious to one of ordinary skill to add a reflector to the assembly in view of Wegner. Pet. 62–63. Petitioner argues that the base combination could additionally include a reflector and its inclusion would have been motivated to reflect light towards the outer optic and to create a smooth, blended light pattern. *Id*. (citing Ex. 1002 ¶ 185).

Petitioner's analysis for claim 21 is similar to that of claim 19; Petitioner relies on the combination of Soderman and Silescent as providing an AC/DC power conditioner that fits entirely with the junction box. *Id*. at 60. With respect to claim 22, Petitioner asserts that Silescent's provision of a 7.90 inch diameter would be sufficient cover the opening of a 4-inch junction box or can. *Id*. With respect to claim 23, Petitioner points out that both Soderman and Silescent disclose a heat sink forming a trim plate disposed completely external of the can light fixture or electrical junction

box, and sitting below the ceiling plane and thus external to the can light fixture or electrical junction box. *Id*. at 61 (citing Ex. 1013, 7:36–41, Fig. 1; Ex. 1014, Figs. 3, 5; Ex. 1002 ¶ 177).

a. Patent Owner's Arguments

In its Patent Owner Response, Patent Owner does not address separately whether the combined teachings of the references account for the limitations recited in dependent claims 5, 10, 14, 21–23. *See generally* PO Resp. 38–51. Patent Owner reiterates its arguments regarding the prior art status of Silescent, but, as we have discussed above, we determine that Silescent is a printed publication that was distributed in the relevant time period. We have reviewed Petitioner's explanations and supporting evidence as to how the proffered combinations teach these limitations, as well as its explanations as to how one of ordinary skill in the art would have combined the relevant teachings of the references, and we agree with and adopt Petitioner's analysis. *See* Pet. 50–51, 52–53, 59–63. Petitioner, therefore, has demonstrated by a preponderance of the evidence that the subject matter of dependent claims 5, 10, 14, 21, and 23 would have been obvious over the combined teachings of Soderman and Silescent.

With respect to dependent claim 9, Patent Owner argues that one of ordinary skill in the art would not have added a trim ring to the light fixture disclosed in Soderman. PO Resp. 45–48. Patent Owner argues that Petitioner has provided no reason why a trim ring would have been added to "further hold," no reason why the "decorative" fastener of Soderman would need to be covered up. *Id*. Patent Owner also argues that the trim ring, being a ring, could not have been used to cover the attachment mechanism of the outer optic without also covering the optic itself. *Id*. (citing Ex. 2001

¶ 124). Petitioner replies that Dr. Coleman explains that using an attachment ring was well-known in the art—as evidenced by the disclosure in Kim (Ex. 1022)—and would have been desirable because it provided a firm attachment mechanism that also served the aesthetic function of covering fasteners. Pet. Reply 19 (citing Ex. 1002 ¶ 146). Petitioner also replies that a person of ordinary skill in the art would have found it obvious to replace one well-known component, such as a decorative bolt, for another, like a trim ring, that serves the same purpose. *Id*. (citing *KSR*, 550 U.S. at 416).

We agree with Petitioner that one of ordinary skill in the art would have made the modification to Solderman proffered by Petitioner. We are persuaded that a trim ring could be added to Soderman, which would require some modification of Soderman. Patent Owner's arguments assume the bodily incorporation of the trim ring into the fixture of Soderman, but some modification would necessarily be needed. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). We conclude that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of dependent claim 9 would have been obvious over the combined teachings of Soderman and Silescent.

With respect to dependent claim 11, Patent Owner argues that the Petition and Dr. Coleman did not properly consider Roberge's teachings in positing a motivation to combine, and that one of ordinary skill in the art would not have been motivated to combine Roberge's "chimney effect" heat dissipation system with Soderman's heat dissipation system. PO Resp. 49–50 (citing Ex. 2001 ¶¶ 127–29). Petitioner responds that Dr. Coleman explained the design realities and safety concerns that would have motivated a person of ordinary skill in the art to combine Soderman, Silescent, and

Roberge, and that Patent Owner's argument fails to recognize the common sense, practical, design, and safety considerations identified by Dr. Coleman." Pet. Reply 11 (citing Ex. 1002 ¶ 103).

We agree with Petitioner that one of ordinary skill in the art would have considered Roberge's mounting bracket and would have addressed the luminaire's overall heat dissipation, without bodily incorporating one structure into the other. We further agree with Petitioner that a person of ordinary skill in the art would have relied upon Roberge for any and all of what have taught or suggested, and not only for the specific problem addressed. *See* Pet. Reply 11–12. We conclude that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of dependent claim 11 would have been obvious over the combined teachings of Soderman, Silescent, and Roberge.

With respect to dependent claim 17, Patent Owner argues that Petitioner does not identify what element of Wegner corresponds to its heat spreader, or how the reflector of Wegner would be incorporated into resulting luminaire to meet the limitations of claim 17. PO Resp. 50–51. Petitioner responds that the Petition provided that "Wegner discloses 'a reflector housing 320 is coupled to the bottom surface 310a of the heat sink 310,'" and set forth how the reflector housing is configured to receive a reflector. Pet. Reply 21–22 (citing Pet. 63). Petitioner also argues that claim 17 does not set a particular optical performance for the light fixture, that one of ordinary skill in the art would have understood how the reflector would shape the light distribution, and that Dr. Coleman provides motivation "by teaching that a reflector creates desirable smooth, blended light pattern without a hard visible line in the light pattern. *Id*. at 13 (citing Ex. 1002

¶ 123).

We agree with Petitioner's response to Patent Owner's arguments and adopt it as our own. We conclude that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of dependent claim 17 would have been obvious over the combined teachings of Soderman, Silescent, and Wegner.

b. Summary

Therefore, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of dependent claims 5, 9–11, 14, 17, and 21–23 would have been obvious over the combined teachings of Soderman, Silescent, Roberge, and Wegner, as discussed above.

III. CONCLUSIONS

Petitioner has demonstrated by a preponderance of the evidence that (1) claims 1, 5, 9, 10, 14, 15, and 19–23 are unpatentable under 35 U.S.C. § 103 over Soderman and Silescent; (2) claim 11 is unpatentable under 35 U.S.C. § 103 over Soderman, Silescent, and Roberge; and (3) claim 17 is unpatentable under § 103 over Soderman, Silescent, and Wegner. Petitioner has not demonstrated by a preponderance of the evidence that (1) claims 1–4, 6, 14, and 15 are anticipated under 35 U.S.C. § 102 by Chou; (2) 3, 4, and 19–23 are unpatentable under 35 U.S.C. § 103 over Chou; and (3) claims 7, 8, 11, and 12 are unpatentable under § 103 over Chou and Roberge; (4) claim 16 is unpatentable under 35 U.S.C. § 103 Chou and Love; and (5) claim 17 is unpatentable under § 103 over Chou and Wegner.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that claims 1, 5, 9–11, 14, 15, 17, and 19–23 of the '968 Patent are held to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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