

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HOME DEPOT U.S.A., INC.,
Petitioner,

v.

LYNK LABS, INC.,
Patent Owner.

IPR2021-01368
Patent 10,757,783 B2

Before JON B. TORNQUIST, MONICA S. ULLAGADDI, and SCOTT
RAEVSKY, *Administrative Patent Judges*.

RAEVSKY, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Home Depot U.S.A., Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1, 4, 8, 11, 16, and 17¹ of U.S. Patent No. 10,757,783 B2 (Ex. 1001, “the ’783 patent”). Lynk Labs, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). Based on these and other submissions, we instituted an *inter partes* review of all challenged claims (Paper 9, “Decision” or “Dec.”). Subsequent filings include a Patent Owner Response (Paper 25, “PO Resp.”), a Petitioner Reply (Paper 31, “Reply”), and a Patent Owner Sur-reply (Paper 37, “Sur-reply”). An oral hearing was held on November 17, 2022, and a copy of the transcript was entered into the record. Paper 48 (“Tr.”).

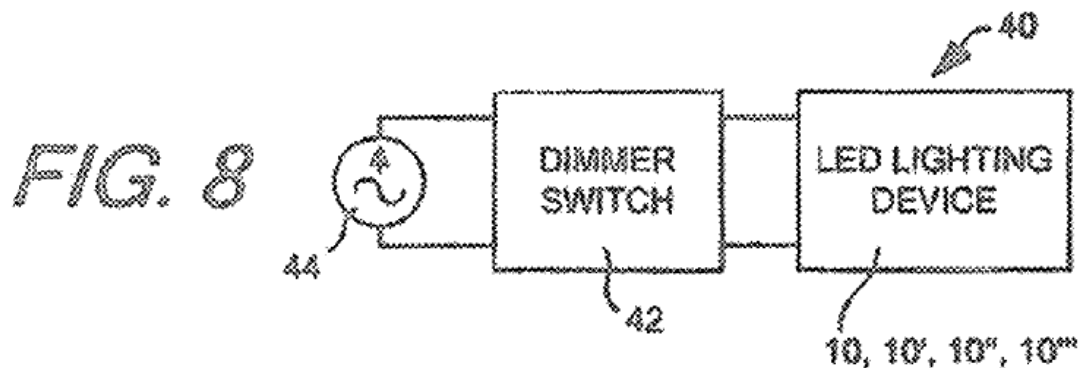
We have jurisdiction over this proceeding under 35 U.S.C. § 6(b). After considering the evidence and arguments of the parties, we determine that Petitioner has proven by a preponderance of the evidence that claims 1, 4, 8, 11, and 16 of the ’783 patent are unpatentable. *See* 35 U.S.C. § 316(e).

II. BACKGROUND

A. The ’783 patent

The ’783 patent relates to circuits with light-emitting diodes (LEDs) driven by alternating current (AC) that are color temperature controllable and/or have an increased power factor and reduced total harmonic distortion. Ex. 1001, 1:24–28, 3:29–35, 10:57–59. Figure 8, reproduced below, depicts an example LED circuit:

¹ Patent Owner statutorily disclaimed claim 17, so we do not address it further in this decision. Ex. 2003; *see* 37 C.F.R. § 42.107(e) (“No *inter partes* review will be instituted based on disclaimed claims.”).



See id. at 10:10–12. Figure 8 depicts an AC power source 44, a dimmer switch 42, and LED lighting devices 10. *Id.* at 17:28–36. The dimmer switch may control the voltage applied to LED lighting devices 10. *Id.* at 17:34–35. As the dimmer switch is turned to provide more voltage to LED lighting devices 10, amber colored LEDs may be turned on and increase in intensity. *Id.* at 17:36–39. Further voltage increases may turn on blue LEDs. *Id.* at 17:39–43. As the dimmer switch is turned up, the color temperature decreases. *Id.* at 17:43–46. Conversely, when the dimmer switch is turned down, the light has a warmer color temperature. *Id.* at 17:46–51.

B. Challenged Claims

Petitioner challenges claims 1, 4, 8, 11, and 16 of the '783 patent. Claim 1 is illustrative:²

1. An LED lighting device comprising:
[a] at least one LED circuit having at least two LEDs, wherein an LED of the at least two LEDs is capable of emitting light of a different color temperature than at least one other LED of the at least two LEDs; and

² For convenience, we use Petitioner's element labeling. *See* Pet. 24–30.

- [b] a switch configured to enable user selection of the different color temperatures of light to be emitted by the at least one LED circuit,
- [c] wherein the color temperature is produced by at least one of the at least two LEDs,
- [d] wherein the at least one LED circuit and the switch are integrated into the LED lighting device,
- [e] wherein the LED lighting device is driven with an AC mains voltage source, and
- [f] wherein the at least one LED circuit is enclosed in a water-resistant housing.

Ex. 1001, 22:21–36.

C. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 4):

Claim(s) Challenged	35 U.S.C. §³	Reference(s)/Basis
1, 4, 8, 11, 16	103(a)	Grajcar, ⁴ Walter ⁵
1, 4, 8, 16	103(a)	Reymond, ⁶ Stephens ⁷
1, 4, 16	103(a)	Walter
8, 11	102 ⁸	Walter

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. Because the challenged patent claims priority to an application filed before March 16, 2013, we refer to the pre-AIA versions of §§ 102, 103. Ex. 1001, code (63).

⁴ U.S. Publication No. 2011/0273098 A1 to Grajcar (“Grajcar”) (Ex. 1004).

⁵ U.S. Publication No. 2006/0226795 A1 to Walter (“Walter”) (Ex. 1006).

⁶ WIPO Publication No. WO 01/01385 A1 to Reymond (“Reymond”) (Ex. 1005).

⁷ U.S. Patent No. 6,722,771 B1 to Stephens (“Stephens”) (Ex. 1011).

⁸ Petitioner grouped together its § 102 and § 103 grounds over Walter as one Ground 3. Pet. 4. We separate them here for clarity.

Petitioner relies on the declarations of Dr. Michael Lebby (Exs. 1002, 1033), and Patent Owner relies on the declaration of Dr. Alfred Ducharme (Ex. 2009).

III. ANALYSIS

A. Principles of Law

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable as obvious if “the differences between the subject matter sought to be patented 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) (quoting 35 U.S.C. § 103(a)). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We apply these principles to the Petition’s challenges.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 13, 17. Petitioner asserts that

[a] person of ordinary skill in the art (“POSITA”) . . . would have had a bachelor’s degree in electrical engineering, or similar technical field, with two years of relevant experience in

the field of design and/or development of LEDs and circuits in the context of lighting control systems. An increase in experience could compensate for less education.

Pet. 9 (citing Ex. 1002 ¶ 35).

Patent Owner does not dispute the level of skill in the art. *See* PO Resp. 32 (referring to, but not disputing, Petitioner’s proposed level of skill). We are persuaded that Petitioner’s proposal is consistent with the problems and solutions in the ’783 patent and prior art of record. We adopt Petitioner’s definition of the level of ordinary skill in the art.

C. Claim Construction

In *inter partes* review, we construe claims using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2021).

1. “*connection lead*”

Petitioner proposes only one construction, for the term “connection lead” in claim 17. Pet. 13–14. As Patent Owner disclaimed claim 17 and this term does not appear in the remaining challenged claims, we do not need to construe it. Ex. 2003.

2. “*a switch configured to enable user selection*”

Prior to Institution, Patent Owner asserted that Petitioner applied an incomplete claim construction of the phrase “a switch configured to enable user selection.” Prelim. Resp. 19–22. Patent Owner contended that the switch must be “physical” and that a user must “be able to directly select an outcome.” *Id.* at 19. Our Institution Decision preliminarily construed “a

switch configured to enable user selection of the different color temperatures of light” to permit a user to select the color temperature through direct or indirect use of the switch. Dec. 21.

Patent Owner no longer disputes the construction of this term and applies our preliminary construction in its Response. PO Resp. 6. Having reviewed the complete record developed during trial, we determine that the record supports maintaining our preliminary construction of this term for the reasons set forth in our Institution Decision.

We determine that no other terms require construction. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Asserted Obviousness over Grajcar and Walter (Ground 1)

Petitioner contends that claims 1, 4, 8, 11, and 16 would have been obvious over Grajcar and Walter. Pet. 19–43. Based on our review of the evidence and arguments of both parties, we determine for the reasons set forth below that Petitioner has proven by a preponderance of the evidence that claims 1, 4, 8, 11, and 16 would have been obvious over Grajcar and Walter.

Because this ground is dispositive of all the claims, we do not reach Petitioner’s remaining grounds. *See Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the

petitioner has prevailed on all its challenged claims”).

1. *Overview of Grajcar*

Grajcar describes “lighting systems that include light emitting diodes (LEDs).” Ex. 1004 ¶ 2. One example of such a system is shown in Figure 21:

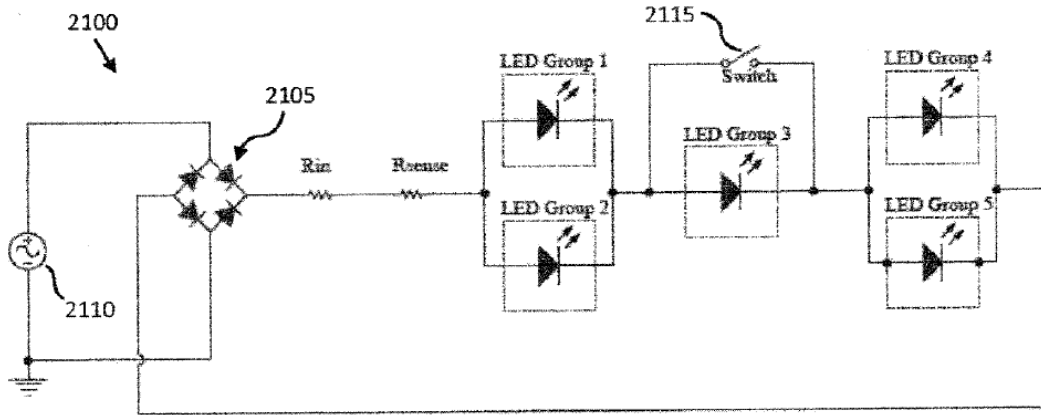


FIG. 21

Id. ¶ 102. Figure 21 depicts a schematic of an example circuit for an LED light engine. *Id.* The circuit in Figure 21 includes bypass switch 2115 connected to a network of five LED groups (LED Group 1–LED Group 5). *Id.* A control circuit (not shown) operates bypass switch 2115. *Id.* ¶ 103. When bypass switch 2115 is in a low impedance state, light is substantially only provided by the LED Groups 1, 2, 4, and 5. *Id.* ¶ 104. When bypass switch 2115 is in a high impedance state, current also flows from LED Group 3. *Id.* ¶ 105.

LED Groups 1, 2, 4, and 5 may emit a first color output, and LED Group 3 may emit at least a second color output. *Id.* ¶ 106. The first color may be a warm color (e.g., blue or green) with a color temperature of about 2700–3000 K. *Id.* ¶ 107. The second color may be a cool color (e.g., white)

with a color temperature of about 5000–6000 K. *Id.* There may be a smooth transition from a cool color to a warm color, for example, by lowering a position of a user input element on a dimmer control. *Id.*

In operation, a user effectuates color change by input on a dimmer control. *Id.* ¶ 107. The dimmer control affects the AC excitation current supplied to Grajcar’s LED light engine. *Id.* ¶¶ 104, 107. The AC excitation current, in turn, actuates Grajcar’s bypass switch 2115, which causes current to flow (or not flow) through LED Group 3. *Id.* ¶¶ 104, 105. Turning LED Group 3 on or off changes the emitted color temperature. *Id.* ¶¶ 106, 107.

2. Overview of Walter

Walter describes lighting devices having a circuit including LEDs.
Ex. 1006 ¶ 2. Figure 2 depicts an example lighting device:

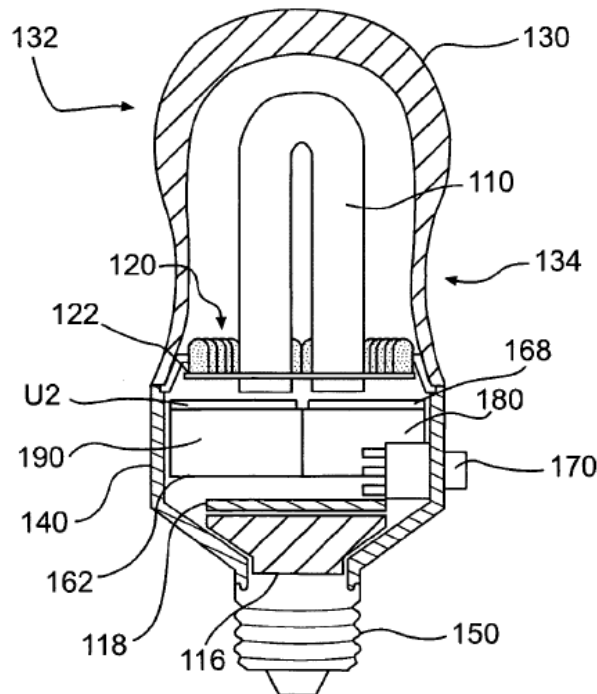


FIG. 2

Id. ¶ 21. The lighting device of Figure 2 is a light bulb with the housing removed for clarity. *Id.* ¶¶ 21, 29. LEDs 120 are mounted on base 140, and compact fluorescent light source 110 is mounted on base 140 to provide a source of white light for illumination. *Id.* ¶ 30. A user interface 170 allows a user to select one or more of perceived color, brightness, and activation of LEDs 120. *Id.* ¶ 43. User interface 170 may include three switches. *Id.*

3. *Independent Claim 1*

a. An LED lighting device comprising

Petitioner argues that Grajcar discloses the preamble because Grajcar refers to “lighting systems that include light emitting diodes (LEDs).” Pet. 24 (citing Ex. 1004 ¶ 2; Ex. 1002 ¶ 67). Patent Owner does not dispute that Grajcar discloses the preamble. We agree that Grajcar discloses the preamble, irrespective of whether it is limiting.

b. [a] at least one LED circuit having at least two LEDs, wherein an LED of the at least two LEDs is capable of emitting light of a different color temperature than at least one other LED of the at least two LEDs

Petitioner argues that Grajcar discloses this limitation. Pet. 24–25. Petitioner relies on the following disclosure in Grajcar:

... LED Groups 1, 2, 4, 5 may each include about 16 LEDs in series. The LED Group 3 may include about 23 LEDs in series. The LED Groups 1, 2, 4, 5 may include LEDs that *emit a first color output*, and the LED Group 3 may include LEDs that *emit at least a second color output* when driven by a substantial current. In various examples, the number, color, and/or type of LED may be different in and among the various groups of LEDs.

By way of an illustrative example and not limitation, the first color may be substantially a warm color (e.g., blue or green) with a color temperature of about 2700-3000 K. The second

color may be substantially a cool color (e.g., white) with a color temperature of about 5000-6000 K.

Id. at 25 (citing Ex. 1004 ¶¶ 102, 106⁹, Fig. 21 (depicting an LED circuit)) (emphasis added). Patent Owner does not dispute that Grajcar discloses this limitation. We agree that Grajcar discloses it.

c. [b] a switch configured to enable user selection of the different color temperatures of light to be emitted by the at least one LED circuit

Petitioner argues that both Grajcar alone and the combination of Grajcar and Walter discloses this limitation. Pet. 26–27. Because we find persuasive Petitioner’s argument that the combination of Grajcar and Walter discloses this limitation, we need not determine whether Grajcar alone discloses it. *See Boston Sci.*, 809 F. App’x at 990 (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding”).

Petitioner refers to the following annotated Figure 21 in Grajcar, which depicts an LED light engine circuit:

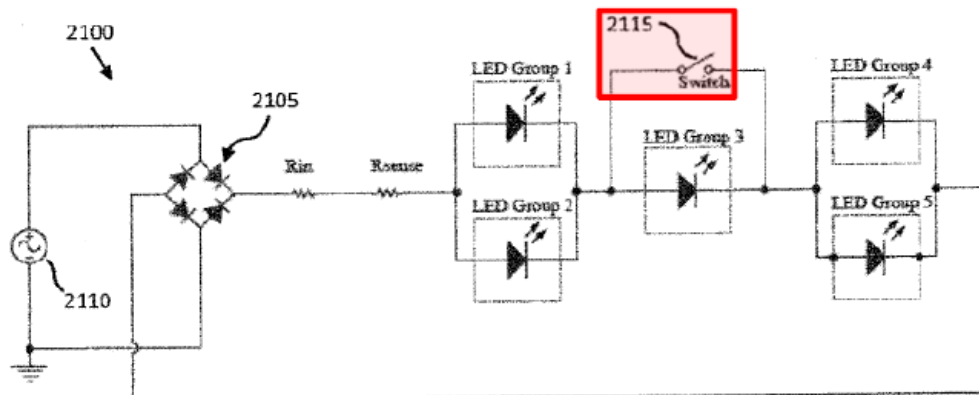


FIG. 21

⁹ Petitioner actually quotes Grajcar paragraphs 106 and 107.

Pet. 26; Ex. 1004 ¶ 102. Petitioner contends that Grajcar Figure 21 includes a switch 2115 (in the red box) that enables user selection in an LED circuit of different color temperatures of light. Pet. 26 (citing Ex. 1004 ¶¶ 104–107). According to Petitioner, the position of switch 2115 determines whether LED Group 3 emits light and therefore affects the color output of the circuit. *Id.* at 26–27 (citing same). Petitioner further contends that switch 2115 actuates based on AC input excitation current, which is changed via a dimmer control. *Id.* (citing same). Petitioner argues that a user therefore modifies the color temperature in Grajcar “by lowering a position of the user input element on the dimmer control.” *Id.* (citing same).

Petitioner further contends that, to the extent Patent Owner argues that switch 2115 does not meet the claimed limitation, it would have been obvious to modify Grajcar by adding Walter’s switch that allows user input. *Id.* at 27 (citing Ex. 1002 ¶¶ 72–73, Pet. § IX.C (Rationale for Combining Grajcar and Walter)). Petitioner asserts that Walter discloses a “user input element” and “an implementation of that element on LED lighting devices.” *Id.* at 21 (citing, e.g., Ex. 1006 ¶ 43, Fig. 2). Petitioner also asserts that it would have been obvious to integrate the LED circuits and switch of Grajcar Figure 21 with Walter’s LED bulb. *Id.*

As for reasons to combine, Petitioner argues that one of ordinary skill in the art would have “integrate[d] the LED circuits and switch of [Grajcar] Figure 21 with the LED bulb disclosed in Walter, because Grajcar discloses use of ‘a user input element’ and Walter shows an implementation of that element on LED lighting devices.” *Id.* (citing Ex. 1004 ¶¶ 8, 62, 107, 189, 209; Ex. 1006 ¶ 43, Fig. 2). Petitioner asserts that integrated switches for color temperature selection were well-known and commonly used for LEDs

before the priority date of the '783 patent. *Id.* (citing Ex. 1002 ¶ 61 (citing Ex. 1023, switch 124)). Both references are concerned with driving LED circuits to provide LED illumination, according to Petitioner. *Id.* (citing Ex. 1002 ¶ 62). Petitioner further contends that one of ordinary skill in the art would have known that “using a switch is a simple way to mix the LED light to affect the color temperature.” *Id.* at 22 (citing Ex. 1002 ¶ 64). Switching, removing, or dimming an LED would allow design flexibility, according to Petitioner. *Id.* Petitioner further contends that “[a] POSITA would have found that the teachings of Grajcar and Walter could have been predictably combined, at least because of the predictability of the art of LED lighting and the known interchangeability of the various elements.” *Id.* (citing Ex. 1002 ¶ 65).

Petitioner also asserts that there would have been a reasonable expectation of success in combining Grajcar and Walter “because the references use known variations of existing technology to solve routine and well understood problems in predictable ways.” *Id.* at 23. According to Petitioner, it was well within the skill of a POSITA to combine the references because the circuits “are extremely basic.” *Id.* And Petitioner contends that “[a] POSITA would have known how to implement a user interface into an LED light as evidenced by the level of disclosure in [the '783 patent] itself, which merely states the functionality exists at a high level.” *Id.* (citing Ex. 1001, 17:21–51). Petitioner concludes that “[a] POSITA would thus understand that it would have been obvious based on Grajcar in view of Walter to have a switch configured to enable user selection of the different color temperatures of light to be emitted by the at least one LED circuit.” *Id.* (citing Ex. 1002 ¶ 66).

After considering the arguments of both parties, including Patent Owner’s arguments, which we address below, we agree with Petitioner that one of ordinary skill in the art would have combined Grajcar and Walter in the manner proposed. For instance, Petitioner persuasively argues, and Dr. Lebby persuasively testifies, that integrated switches for color temperature selection were well known. *Id.* at 21; Ex. 1002 ¶ 61; Ex. 1023 ¶ 113 (describing an “LED lamp 100,” where “color and brightness of the light produced are controllable using these dials 122 and 124”). We also agree with Petitioner and Dr. Lebby that using a switch would have been a simple, predictable way to affect the color temperature. Pet. 22 (citing Ex. 1002 ¶ 65); *see also KSR*, 550 U.S. at 401 (“Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”). We also agree with Petitioner’s other arguments that this limitation would have been obvious over Grajcar and Walter, which we address further below in the context of Patent Owner’s arguments.

Patent Owner raises three arguments. PO Resp. 16–18. First, Patent Owner argues that Petitioner and its expert provide no “explanation of how the resulting combination would operate, what specific elements of Walter would be incorporated into Grajcar, or how they would be incorporated into Grajcar.” *Id.* at 16 (citing Pet. 27; Ex. 2011, 47:13–22¹⁰). Patent Owner asserts that the Petition’s rationale “does not identify what specific elements of Walter would be incorporated into Grajcar” and does not identify what Walter’s user input element is “or how it would be combined with Grajcar.”

¹⁰ Patent Owner appears to mis-cite the deposition transcript. Patent Owner may be referring to Ex. 2011, 55:4–56:8.

Id. (citing Pet. 21). Thus, Patent Owner concludes that “Patent Owner and the Board are left to speculate as to which portions of [Walter] are relevant and how Petitioner intended the combination to work.” *Id.* at 16–17.

Petitioner responds that Patent Owner fails to address Petitioner’s proposed combination, which integrates Grajcar’s circuit “with the LED bulb” of Walter, including “by adding” Walter’s switch. Reply 3–4 (citing Pet. 20–23, 27). The Sur-reply asserts that “[i]t is unclear whether Petitioner intends to incorporate Grajcar Fig. 21 into Walter’s bulb, or incorporate Walter’s user interface 170 into Fig. 21.” Sur-reply 3.

We view Petitioner’s combination to be sufficiently clear, setting forth sufficiently “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418.

Petitioner explains that “Grajcar discloses a switch (switch 2115) configured to enable user selection” and that “[t]o the extent [Patent Owner] argues that switch 2115 does not explicitly show ‘a switch configured to enable user selection,’ it would have been obvious to modify Grajcar by adding a switch that allows user input, as taught by Walter.” Pet. 26–27 (citing Ex. 1004, ¶¶ 107, 102–112, 192–195, Fig. 21; Ex. 1002 ¶¶ 72–73). This combination would have involved “integrat[ing] the LED circuits and switch of [Grajcar] Figure 21 *with the LED bulb* disclosed in Walter.” *Id.* at 21 (emphasis added). That is, the proposed combination simply aims to use Grajcar’s *LED circuit* in Walter’s bulb, so that Walter’s switch may actuate Grajcar’s LED circuit. *See id.* at 21–23, 27. Petitioner confirmed this position at the oral hearing, explaining, “so the proposed combination, looking again at Slide 13, it’s taking all of the circuits in [Grajcar] Figure 21 and putting

them into the bulb of [Walter] Figure 2 where any user selection of color temperature is done using [Walter's] Switch 170.” Tr. 11:20–23.

Not only is Petitioner's proposed combination sufficiently clear, but by arguing that Petitioner provides no “explanation of how the resulting combination would operate” or “what specific elements of Walter would be incorporated into Grajcar,” Patent Owner essentially attacks the Petition for not explaining how to bodily incorporate Grajcar into Walter. But “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). Patent Owner's bodily incorporation argument fails to undermine Petitioner's persuasive showing. In any event, Petitioner contends, and Patent Owner does not dispute, that “[i]t would have been well within the skill of a POSITA to implement Grajcar's LED light with the user interface of Walter,” as “[t]he circuits described in Grajcar and claimed in claim 1 are extremely basic.” Pet. 23; *see also* Ex. 1002 ¶ 66 (Dr. Lebby testifying the same).

Patent Owner's second argument appears in the Patent Owner Response section disputing Petitioner's reasons to combine, in which Patent Owner actually argues that Walter does not disclose a claim limitation. PO Resp. 17. Patent Owner asserts, “[t]o the extent the Board deems it necessary to speculate regarding the combination[,]. . . Walter does not discuss this user interface as changing color temperature as required by the claim.” *Id.* This is true, Patent Owner contends, because “the only white

light discussed [in Walter] is provided by fluorescent light source 110.” *Id.* (citing Ex. 1006 ¶ 30). In response, Petitioner contends that Patent Owner “fails to address the combination as a whole.” Reply 4. “In the combination,” Petitioner explains, “a POSITA would have been motivated to use the integrated, user-selectable switch 170 as taught by Walter to implement *Grajcar’s user selection of color temperature*.” *Id.* at 5 (citing Pet. 26–27) (emphasis added). The Sur-reply reemphasizes that “Walter does not discuss user interface 170 as changing color temperatures.” Sur-reply 4. We determine that Patent Owner’s argument misses the mark because it argues the references individually, rather than addressing the combination as a whole. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). It is in the combination, not in Walter alone, that “user-selectable switch 170 as taught by Walter [may] implement *Grajcar’s user selection of color temperature*.” Reply 5.

Finally, Patent Owner’s third argument is that “the Petition does not explain how user interface 170 would be incorporated into *Grajcar* to meet this limitation.” PO Resp. 18. As we explained above, Petitioner’s combination employs *Grajcar’s* circuit in Walter’s bulb, so that Walter’s switch may actuate *Grajcar’s* circuit. *See* Pet. 21–23, 27. To the extent the Petition may imply an alternative argument where Walter’s switch 170 is incorporated into *Grajcar’s* Figure 21 circuit instead of incorporating *Grajcar’s* circuit into Walter’s bulb, Petitioner disavowed this argument at the hearing. Tr. 11:1–12:15; 50:11–51:8 (“And so it is not that we’re proposing two different combinations. The combination is the bulb of Walter, which has user input 170, and inside the bulb is Figure 21 of

[Grajcar].”). Thus, on the full record, Patent Owner’s final argument is unavailing.

For the reasons stated, we determine that the combination of Grajcar and Walter discloses this limitation.

d. [c] wherein the color temperature is produced by at least one of the at least two LEDs

Petitioner argues that the following disclosure in Grajcar teaches this limitation: “The LED Groups 1, 2, 4, 5 may include LEDs that emit a first color output, and the LED Group 3 may include LEDs that emit at least a second color output when driven by a substantial current.” Pet. 27 (citing Ex. 1004 ¶ 106). Patent Owner does not dispute that Grajcar discloses this limitation. We agree that Grajcar discloses this limitation.

e. [d] wherein the at least one LED circuit and the switch are integrated into the LED lighting device

Petitioner argues that Grajcar discloses this limitation. Pet. 28–29. Grajcar teaches integrating the LED circuits and switch as follows, according to Petitioner: “In some embodiments, the bypass circuit may be implemented in whole or in part using discrete components, and/or integrated with one or more LEDs associated with a group of bypassed LEDs or the entire AC LED circuit.” *Id.* at 28 (citing Ex. 1004 ¶¶ 8, 62). Petitioner thus asserts that one of ordinary skill in the art would have understood that Grajcar discloses that the at least one LED circuit and the switch are integrated into the LED lighting device. *Id.* (citing Ex. 1002 ¶ 76).

Petitioner also contends that it would have been obvious to integrate Grajcar’s LED circuits and switch of Figure 21 “because Grajcar discloses

that it would be beneficial and Walter shows integration of that element on LED lighting devices.” *Id.* at 29 (citing Ex. 1004 ¶¶ 8, 62, 107, 189, 209; Ex. 1006 ¶ 43, Fig. 2; Ex. 1002 ¶ 77).

Patent Owner does not dispute Petitioner’s arguments on this limitation. We determine that both Grajcar and the combination of Grajcar and Walter discloses it.

f. [e] wherein the LED lighting device is driven with an AC mains voltage source

For this limitation, Petitioner argues that Grajcar’s LED lighting device in Figure 21 is driven by a 120 Volt AC voltage source (“AC input excitation 2110”). Pet. 29 (citing Ex. 1004 ¶¶ 102–105, 191). Petitioner again references Grajcar’s Figure 21, reproduced below:

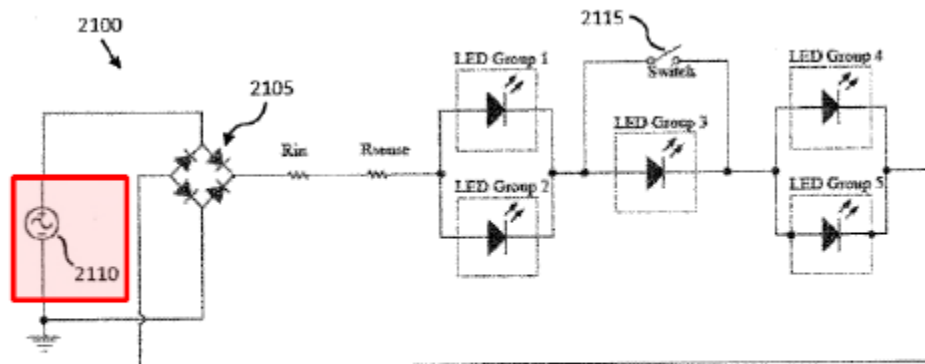


FIG. 21

Id. at 30. As noted above, Figure 21 depicts Grajcar’s light engine, this time with Petitioner’s red highlighting showing the AC input excitation 2110. See Ex. 1004 ¶¶ 102–105, 191. Petitioner therefore contends that a POSITA would have understood that Grajcar discloses driving its LED lighting device with an AC mains voltage source. Pet. 30 (citing Ex. 1002 ¶¶ 78–79).

Patent Owner contends that AC mains voltage and AC voltage are separate concepts, namely, “the power available at a typical wall outlet” (AC mains voltage) versus “any form of alternating current power source” (AC voltage). PO Resp. 18–19 (citing Ex. 2009 ¶ 72; Ex. 2011, 82:23–24, 83:7–8; Ex. 1001, 12:19–21, 17:28–32). Grajcar’s voltage source 2110 is alternating but not AC mains, Patent Owner contends, because “it is not the same power as is . . . available to a wall outlet” but rather “the power received after being modulated by the dimmer module.” *Id.* at 19–20 (citing Ex. 1004 ¶ 192; Ex. 2009 ¶ 73). Thus, Patent Owner contends, “Grajcar’s voltage source 2110 is similar to the dimmer switch connected to mains power described in the ’783 patent and not the mains power itself.” *Id.* at 19. Patent Owner further asserts that even if Petitioner argues that the dimmer “could be set to full power and thus receive full AC mains power” in Grajcar, “the claims require user selection of different color temperatures,” and Grajcar obtains different color temperatures by modulating the voltage source 2110 with the dimmer module. *Id.* at 20 (citing Ex. 1004 ¶¶ 104, 192). Thus, Patent Owner contends, Grajcar’s voltage source “cannot remain a single power level (e.g., AC mains) and still operate to change color temperatures,” so “Grajcar’s voltage source 2110 is therefore not AC mains.” *Id.*

Petitioner views Patent Owner as conceding that Grajcar discloses “an AC mains power” source. Reply 6 (citing PO Resp. 18–20). Petitioner asserts that Grajcar teaches this by describing an “AC input” that “may be excited with, for example, a nominally 120 Volt sinusoidal voltage at 60 Hz.” *Id.* (citing Ex. 1004 ¶¶ 191, 102–105). Petitioner also relies on Patent Owner’s expert deposition testimony that “a typical mains voltage in the

U.S.” is “120 volts, 60 Hertz.” *Id.* at 6–7 (citing Ex. 1032, 21:20–22:5); *see also* Ex. 1033 ¶ 9 (Petitioner’s expert agreeing.). Even if Grajcar’s intervening dimmer switch modifies the voltage, Petitioner contends, the AC mains is still the “voltage source” that drives the LED lighting device. *Id.* at 7–8 (citing Ex. 1032, 26:20–27:4 (Patent Owner’s expert agreeing that a dimmer switch on its own cannot power a circuit.)).

Further, Petitioner points out that Patent Owner “immediately recognizes the . . . flaw in its argument—if the dimmer switch is at 100%, the LED lighting device will ‘receive full AC mains power’ and, thus, be driven as claimed.” *Id.* at 8 (citing PO Resp. 20). Petitioner contends that Patent Owner’s claim interpretation to address this flaw, namely requiring the LED lighting device to be driven by AC mains “when” the user is operating the switch, should be rejected for excluding every disclosed embodiment of the ’783 patent. *Id.* “The only disclosed switches,” Petitioner contends, “operate by changing the AC voltage provided to the LED lighting device, which in turn causes the LED lighting device to both dim and warm its color temperature.” *Id.* at 9 (citing, e.g., Ex. 1001, 4:46–54, 12:18–26, 17:21–57, 15:4–59).¹¹ And claim 1 “does not require the AC

¹¹ Petitioner also argues, for the first time on Reply, that the combination of Grajcar and Walter discloses this limitation. Reply 9–10. Patent Owner rightly points out that this is a new theory of obviousness, as the Petition relies on Grajcar alone. Sur-reply 7 (citing Pet. 29–30 (“A POSITA would understand Grajcar to disclose [this limitation].”)). We do not consider this new theory of unpatentability because it improperly takes the case “in a new direction with a new approach as compared to the positions taken in a prior filing.” Consolidated Trial Practice Guide 74, available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>; *see also Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016) (explaining that a petitioner may not raise a new theory of

input ‘remain a single’ voltage or that the switch be precluded from modifying that voltage,” Petitioner contends. *Id.* at 8 (citing Ex. 1033 ¶¶ 10–11).

Patent Owner does not squarely address Petitioner’s “excludes all embodiments” argument in the Sur-reply. *See* Sur-reply 6. Instead, while acknowledging Petitioner’s argument, Patent Owner avers that its “argument is specific to Grajcar and does not address whether claim 1 permits AC mains to be a constant voltage source.” *Id.* Then, Patent Owner asserts (without explanation) that “[a]t least some embodiments are clearly consistent with claim 1’s language.” *Id.* at 7 (citing, e.g., Ex. 1001, Fig. 8, 4:46–54, 12:18–26, 15:4–50, 17:21–57). In the hearing, when asked about this issue, Patent Owner stated that “certain of” Figures 2A, 2B, 3A, 3B, 4, and 5 disclose embodiments that “could be driven by just AC mains.” Tr. 39:1–12. Patent Owner also reiterates that even if AC mains were an input to voltage source 2110, “voltage source 2110 would still have to modify the AC mains to drive circuit 2100,” so Grajcar’s Figure 21 “is driven by voltage source 2110, which is not AC mains.” Sur-reply 5–6. Lastly, Patent Owner emphasizes that “AC mains power is a constant power that does not vary,” so “Fig. 21 would not change color temperatures if the circuit were driven by AC mains.” *Id.* at 6.

Turning to our analysis, we view Petitioner as stating the better case. As a threshold matter, we agree with Petitioner that Grajcar discloses an AC mains voltage source. Reply 6. Grajcar discloses an “AC input” that “may be excited with . . . a nominally 120 Volt sinusoidal voltage at 60 Hz.”

unpatentability on reply); 37 C.F.R. § 42.23(b).

Ex. 1004 ¶ 191. Petitioner’s expert, Dr. Lebby, persuasively testifies that “[o]ne typical mains voltage in the United States is 120 Volts at 60 Hertz,” and “a POSITA would have understood that Grajcar’s disclosure of a 120 Volt, 60 Hz AC source is disclosure of an AC mains voltage source.”

Ex. 1033 ¶ 9 (citing Ex. 1004 ¶¶ 191, 102–105). And Patent Owner’s expert, Dr. Ducharme, testifies that “120 volts, 60 Hertz” is a “[t]ypical mains voltage.” Ex. 1032, 21:20–22:5. Thus, we agree with Petitioner and Dr. Lebby that one of ordinary skill in the art would have viewed Grajcar’s 120 Volt, 60 Hz disclosure as disclosing AC mains voltage.

Having established that Grajcar discloses an AC mains voltage source, we next determine whether Grajcar’s LED lighting device “is driven with” the AC mains voltage source, as required by claim 1. Ex. 1001, 22:33–34. Annotated Grajcar Figure 21, which Petitioner maps to the claimed LED lighting device, is reproduced again below:

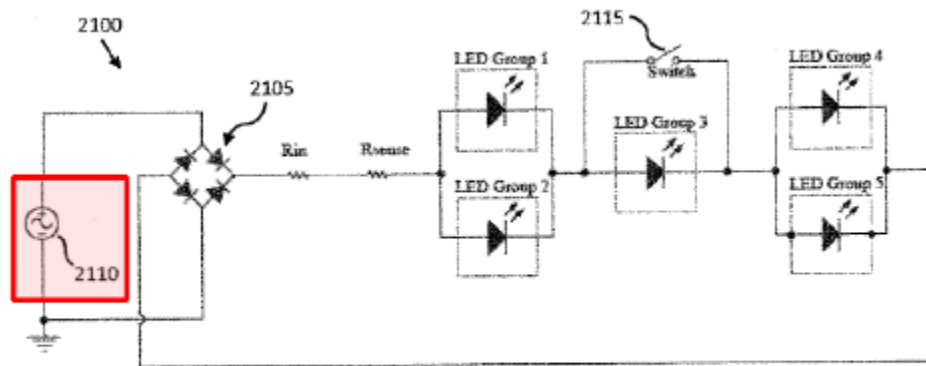


FIG. 21

Pet. 24. In Figure 21 above, AC input excitation 2110 (red)¹² is supplied to rectifier 2105, which supplies substantially unidirectional output current to a

¹² Grajcar calls element 2110 AC input excitation in paragraph 104 but also refers to element 2110 as “periodic voltage source 2110” in paragraph 102.

load circuit including a network of five LED groups and bypass switch 2115. Ex. 1004 ¶¶ 102, 104. This “AC input” can be a 120 Volt, 60 Hz input, as explained above. *Id.* ¶ 191. Thus, the circuit of Figure 21 (Grajcar’s “LED light engine,” i.e., the LED lighting device) receives power from an AC mains voltage source (after it has been potentially modified by a dimmer, not shown). *See id.* ¶¶ 102, 107 (“the AC excitation supplied to the light engine is reduced, for example, by lowering a position of the user input element on the dimmer control”), 191. The question remains whether the LED lighting device is, in fact, “driven” by the AC mains voltage source, or whether, as Patent Owner argues, voltage modification by the dimmer means that the LED lighting device is not “driven” by the AC mains voltage source. *See* PO Resp. 19–20.

The ’783 patent specification illuminates the issue. Petitioner persuasively argues that Patent Owner’s interpretation of claim 1 as requiring (1) the AC input to “remain a single power level” while changing color temperatures, and (2) that the switch be precluded from modifying that voltage, should be rejected because it excludes every disclosed embodiment. Reply 8; *see Nellcor Puritan Bennett, Inc. v. Masimo Corp.*, 402 F.3d 1364, 1368 (Fed. Cir. 2005) (explaining that “a construction that excludes all of the embodiments of an invention is ‘rarely, if ever, correct’”) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996)). Patent Owner’s narrow interpretation of claim 1’s switch excludes all disclosed embodiments because the only way the disclosed LED lighting device is driven by AC voltage mains is—like Grajcar—through a switch or dimmer that modifies the AC mains voltage. Dr. Lebby testifies, and we agree, that “[t]he only disclosed switches operate by changing the AC

voltage provided to the LED lighting device, which in turn causes the LED lighting device to both dim and warm its color temperature.” Ex. 1033 ¶ 12 (citing Ex. 1001, Fig. 8, 4:46–54, 12:18–26, 17:21–57, 15:4–59).

For instance, the Specification discloses “a dimmer switch capable of providing AC voltage to the LED lighting device” and that the “dimmer switch may be used to control the AC voltage . . . to control a color temperature of light emitted by the LED lighting device.” Ex. 1001, 4:46–54. The specification also refers to the “dimmer switch providing AC power to device 10,” where the AC power source “may be . . . mains power.” *Id.* at 17:27–31. And “[t]he dimmer switch may be used to control the voltage to the circuit, causing more or less voltage to be applied to device 10.” *Id.* at 17:34–36; *see also id.* at 12:18–21 (“dimmer connected to mains power”). In other words, in all disclosed embodiments, the dimmer switch enables changing color temperature by supplying a modified AC voltage to the LED lighting device. *See* Ex. 1033 ¶ 12. So the claim limitation, “wherein the LED lighting device is driven with an AC mains voltage source,” must encompass the LED lighting device receiving an AC voltage modified from the AC mains voltage source.

The Sur-reply points to other portions of the specification that allegedly disprove Petitioner’s argument that Patent Owner’s interpretation excludes all disclosed embodiments. Sur-reply 7 (citing, e.g., Ex. 1001, Fig. 8, 4:46–54, 12:18–26, 15:4–50, 17:21–57). Patent Owner merely cites these sections without explaining their relevance. Nevertheless, we analyze them for completeness’ sake. For instance, Patent Owner cites to Figure 8, but this figure (reproduced above) includes a dimmer switch between the voltage source and LED lighting device, so it does not support Patent

Owner's argument. Likewise, column 4, lines 46–54 is inapposite because it refers to “the lighting system having a dimmer switch capable of providing AC voltage to the LED lighting device” and that “[t]he dimmer switch may be used to control the AC voltage provided to the at least two LED circuits . . . to control a color temperature.” Ex. 1001, 4:46–54. The next section Patent Owner cites states that “LED device 10 may further include connection leads 24, 26 for connecting the device to an AC power source, like for example mains power or a switch or dimmer connected to mains power.” *Id.* at 12:18–26. Although this passage refers to connecting the LED device to mains power *or* to a switch connected to mains, the first option, without a switch, is not claimed. *See id.* The claim explicitly requires “a switch configured to enable user selection of the different color temperatures,” so disclosure of connecting the LED device directly to AC mains is inapposite to what is claimed.

Patent Owner's citation to column 15, lines 4 through 50 covers nearly an entire column of the specification, again without explanation. *See* Sur-reply 7. As near as we can tell, this section generally refers to increasing and decreasing voltages without explaining how this is done. *See* Ex. 1001, 15:4–50. Yet at least part of this passage appears to implicitly refer to a dimmer switch causing LED voltages to change, as it refers to the voltage beginning to be “reduced and device 10 is dimmed.” Ex. 1001, 15:42–43. In any event, as with the preceding passages, Patent Owner's citation of this lengthy passage without explanation does not undermine Petitioner's persuasive showing. Similarly, Patent Owner tersely cites column 17, lines 21 through 57. Sur-reply 7. Quite apart from Patent Owner's conclusory, and thus unpersuasive, citation of this passage, it

explicitly refers to “a dimmer switch providing the AC power to device 10,” so it also does not support Patent Owner’s argument. *E.g.*, Ex. 1001, 17:26–28.

As we noted above, Grajcar’s Figure 21 LED lighting device receives a 120 Volt AC mains input that is modified by a dimmer, just like in the ’783 patent. *See* Ex. 1004 ¶¶ 107, 191, Figure 21. Patent Owner even admits that “Grajcar’s voltage source 2110 is similar to the dimmer switch connected to mains power described in the ’783 patent.” PO Resp. 19. Thus, we find that Grajcar’s LED lighting device is driven with an AC mains voltage source.

We address one final issue raised by the Sur-reply. Patent Owner charges Petitioner with contradicting the Petition when Petitioner argues that “even when an intervening dimmer switch is modifying the voltage, the AC mains is still the ‘voltage source.’” Sur-reply 5. This is so, Patent Owner argues, because the Petition relies on Grajcar’s element 2110 as the AC voltage source. *Id.* (citing Pet. 30). Patent Owner asserts that “Petitioner’s new argument should be rejected as unduly prejudicial.” *Id.* (citing 37 C.F.R. § 42.104).

We disagree. The Petition argues that “Grajcar is driven by an AC voltage source (item 2110)” and that “[a] POSITA would understand Grajcar to disclose that the LED lighting device is driven with an AC mains voltage source.” Pet. 29–30. In so stating, the Petition does not assert that item 2110 *itself* is the AC mains voltage source, but rather asserts (1) that item 2110 is an AC voltage source, (2) that Grajcar discloses 120 Volt input, and (3) therefore that a POSITA would understand Grajcar’s circuit to be driven by AC mains. *Id.* The Patent Owner Response contends that

Grajcar's voltage source 2110 is alternating but not AC mains because it is "the power received after being modulated by the dimmer module." PO Resp. 19–20. By pointing to Grajcar's dimmer module, Patent Owner raises a question of whether some intervening device (the dimmer module) between the AC mains and the voltage source 2110 would render Grajcar's LED lighting device not driven by AC mains. The Reply responds squarely to this argument by contending that "even when an intervening dimmer switch is modifying the voltage, the AC mains is still the 'voltage source.'" Reply 7. Thus, we determine that Petitioner's Reply argument was responsive to an argument raised in the Patent Owner Response and was therefore proper. 37 C.F.R. § 42.23(b).

Based on the complete record, Petitioner has established that Grajcar discloses this limitation.

g. [f] wherein the at least one LED circuit is enclosed in a water-resistant housing.

For this limitation, Petitioner argues that it would have been obvious to a POSITA to enclose the LED circuit described in Figure 21 in a water-resistant housing because Grajcar discloses that "[s]ome embodiments may advantageously be enclosed in a water-resistant housing to permit cleaning using pressurized cold water sprays." Pet. 30 (citing Ex. 1004 ¶ 195). Patent Owner does not dispute that Grajcar discloses this limitation, and we agree that Grajcar discloses it.

h. Summary as to Claim 1

Based on the entire record, we find that Petitioner has proven by a preponderance of the evidence that the combination of Grajcar and Walter would have rendered claim 1 obvious.

4. *Independent Claim 8*

Claim 8 is substantially similar to claim 1, except that claim 8 recites “wherein the at least one LED circuit and the at least two LEDs are integrated on a single substrate” instead of claim 1’s “wherein the at least one LED circuit is enclosed in a water resistant housing.” *Compare* Ex. 1001, 22:35–36, *with id.* at 23:3–4. Petitioner’s showing with respect to the other limitations of claim 8 is persuasive for the reasons described above with respect to claim 1.

For the “single substrate” limitation, Petitioner contends that it would have been obvious to integrate the LED circuit and at least two LEDs on a single substrate “because Grajcar discloses that ‘[i]n general, an LED may be created on a conventional semiconductor die’” and that “LEDs can be integrated on a single substrate with other circuitry.” Pet. 33 (citing Ex. 1004 ¶¶ 8, 189). The benefit of integrating these circuits, Petitioner contends, would have been “cost reductions and miniaturization of a complete AC LED light engine.” *Id.* (citing Ex. 1004 ¶¶ 8, 189; Ex. 1002 ¶ 89).

Patent Owner contends that the portions of Grajcar that Petitioner relies on do not disclose this limitation. PO Resp. 21. For instance, Patent Owner contends that paragraph 8 of Grajcar discloses only that a single LED may be integrated with other circuitry on the same die, not that at least two LEDs may be integrated on a single substrate. *Id.* And paragraph 189 of Grajcar discloses only a single group of LEDs with the same color and supporting circuitry being integrated on a single die, Patent Owner contends. *Id.* But in Patent Owner’s view, claim 8 requires “the at least two LEDs” to have different color temperatures, and thus requires “two or more LEDs with

different color temperatures integrated on a single substrate.” *Id.* at 22.

And Grajcar discloses multiple LEDs with the *same* color integrated on a single die, Patent Owner contends. *Id.*

Petitioner responds that Patent Owner’s arguments fail to address the actual combination proposed in the Petition. Reply 10. The Petition states that this limitation would have been obvious over Grajcar, and Patent Owner does not dispute this obviousness, Petitioner adds. *Id.* In Petitioner’s view, Patent Owner admits that Grajcar discloses “multiple LED[s] with the same color[] integrated on a single die.” *Id.* at 11 (citing PO Resp. 21). Petitioner further contends that Patent Owner ignores Grajcar’s teaching that “[i]n some implementations, bypass circuitry may be manufactured on **a single die integrated with** some or **all of the illuminating LED**,” which teaches that “‘all’ of the illuminating LED would be integrated on a single die.” *Id.* (citing Ex. 1004 ¶ 189). Petitioner concludes that a POSITA would have therefore “found it obvious in light of Grajcar to have the ‘at least two LEDs . . . integrated on a single substrate.’” *Id.* (citing Pet. 33).

In the Sur-reply, Patent Owner argues that the Reply abandons the Petition’s position that Grajcar discloses this limitation and “instead relies on the knowledge of a POSITA as a substitute for disclosure in the prior art” without reasoned analysis or support. Sur-reply 9 (citing *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362, (Fed. Cir. 2016)). Patent Owner faults the Petition for merely stating that “a POSITA would have found it obvious” and for relying on conclusory expert testimony. *Id.* (citing Ex. 1002 ¶ 89). Patent Owner further argues that Petitioner has not shown that the hypothetical POSITA’s common knowledge is “unusually simple and the technology particularly straightforward.” *Id.* (citing *Arendi*, 832 F.3d at

1362). Moreover, Patent Owner believes that Grajcar actually teaches “incorporating one or more LEDs in a particular color group onto a die, not integrating different LEDs of different color groups onto the same die.” *Id.* at 10 (citing Ex. 1004 ¶ 189, Fig. 21).

In our view, Patent Owner mistakenly focuses on one part of the Petition’s argument while overlooking the other. The Petition first states that “Grajcar discloses” this limitation, but then adds, “[i]t would have been obvious to a POSITA” to reach this limitation. Pet. 33. In the Response, Patent Owner argues only that Grajcar does not explicitly disclose this limitation. PO Resp. 20–22. Petitioner correctly points out that Patent Owner does not dispute that this limitation would have been obvious in view of Grajcar. Reply 10. Patent Owner attempts to remedy this oversight by addressing obviousness in its Sur-reply, but that is too late. Sur-reply 8–10; 37 C.F.R. § 42.23(b).

In any event, we agree with Petitioner that this limitation would have been obvious to a POSITA in view of Grajcar. We credit Dr. Lebby’s un rebutted testimony¹³ that “a POSITA would have been motivated to integrate the LED circuit and at the least two LEDs on a single substrate because Grajcar discloses that integrating the LED circuit and at least two LEDs onto a single substrate ‘further foster[s] cost reductions and miniaturization of a complete AC LED light engine.’” Ex. 1002 ¶ 89 (quoting Ex. 1004 ¶ 189). And Petitioner persuasively points to Grajcar’s disclosure that “bypass circuitry may be manufactured on a single die integrated with some or all of the illuminating LED.” Pet. 33 (citing

¹³ Patent Owner does not cite any expert testimony for its claim 8 argument. PO Resp. 20–22.

Ex. 1004 ¶ 189); Reply 11 (citing same). Patent Owner’s argument that Grajcar does not disclose “two or more LEDs with *different color temperatures* integrated on a single substrate” overlooks Grajcar’s disclosure that “a single die integrated with some or *all* of the illuminating LED” would have at least suggested to a POSITA to include two or more LEDs with different color temperatures integrated on a single substrate. *See* PO Resp. 21; Ex. 1002 ¶ 89 (emphasis added); Ex. 1004 ¶ 189. Thus, although Grajcar discloses different colored LEDs, Grajcar teaches and suggests integrating all LEDs (which encompasses LEDs of all colors) on a single die. *See* Ex. 1004 ¶¶ 106–107, 189.

Moreover, integrating electronic devices onto a single substrate was a notoriously known method in the prior art, as Patent Owner’s own evidence suggests. *See, e.g.*, Ex. 2004 (Patent Owner’s Responsive Claim Construction Brief in district court), 54 (“Modern electronics are based on the integrated circuit In order to maintain their reliability, these circuits depend on insulating materials that can serve as substrates (that is, the bases on which the microscopic electronic components and their connections are built)”), 93 (“During the 1960s and ’70s, transistors were incorporated into integrated circuits, in which *a multitude of components* (e.g., *diodes*, resistors, and capacitors) are formed on a *single* ‘chip’ of semiconductor material.” (emphasis added)). Thus, the claimed subject matter exemplifies the principle that “[t]he combination of familiar elements according to known methods”—here, multiple LEDs integrated onto a single substrate, as taught and suggested by Grajcar—“is likely to be obvious when it does no more than yield predictable results.” *See KSR*, 550 U.S. at 416; Ex. 1004 ¶ 189; Ex. 1002 ¶ 89.

We therefore agree with Petitioner that this limitation would have been obvious over Grajcar. Thus, we find that Petitioner has proven by a preponderance of the evidence that the combination of Grajcar and Walter would have rendered claim 8 obvious.

5. Dependent Claims 4, 11, and 16

Petitioner contends that dependent claims 4, 11, and 16 are unpatentable as obvious over Grajcar and Walter. Pet. 31–36. Petitioner provides a detailed analysis explaining where the combination of Grajcar and Walter discloses the limitations in these dependent claims, which Patent Owner does not contest. *Id.* Based on our review of the entire record, we determine that Petitioner has proven by a preponderance of the evidence that the combination of Grajcar and Walter would have rendered obvious claims 4, 11, and 16.

IV. CONCLUSION¹⁴

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis¹⁵	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 4, 8, 11, 16	103	Grajcar, Walter	1, 4, 8, 11, 16	
1, 4, 8, 16	103	Reymond, Stephens		
1, 4, 16	103	Walter		
8, 11	102	Walter		
Overall Outcome			1, 4, 8, 11, 16	

¹⁴ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁵ As explained above, we do not reach the Raymond and Stephens or Walter grounds because the Grajcar and Walter ground is dispositive of all the challenged claims.

V. ORDER

It is, therefore,

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1, 4, 8, 11, and 16 of the '783 patent are unpatentable; and

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

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