

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUASAR SCIENCE LLC

Petitioner,

v.

COLT INTERNATIONAL CLOTHING, INC. d/b/a COLT

LED

Patent Owner.

Case: IPR2023-00614

U.S. Patent No. 10,566,895

PETITIONER'S NOTICE OF APPEAL

IPR2023-00614
U.S. Patent No. 10,566,895
Notice of Appeal

Notice is hereby given that, pursuant to 35 U.S.C. §§ 141, 142, 319, and 37 C.F.R. §§ 90.2-90.3, Petitioner Quasar Science LLC (“Quasar”) hereby appeals to the United States Court of Appeal for the Federal Circuit from the Final Written Decision entered on October 7, 2024, (Paper 70), from all underlying findings, determination, rulings, opinions, orders and decisions regarding U.S. Patent No. 10,566,895 (“the ’895 patent”). A copy of the Final Written Decision is attached.

In accordance with 37 C.F.R. §90.2(a)(3)(ii), Quasar further indicates that the issues on appeal include, but are not limited to, the following: (1) the Board’s determination that claims 1–3, 6–18, 21–24, and 27–29 of the ’895 patent are not unpatentable based on the grounds presented in the petition; (2) the Board’s claim constructions, factual findings, conclusions of law, and other determinations supporting or related to the aforementioned issue; and (3) all other issues decided adversely to Quasar in any orders, decisions, rulings, and opinions.

Copies of this Notice of Appeal are being filed simultaneously with the Patent Trial and Appeal Board and with the Clerk’s Office for the United States Court of Appeals for the Federal Court.

Respectfully submitted,

Dated: December 6, 2024 By: /Heath J. Briggs/

IPR2023-00614
U.S. Patent No. 10,566,895
Notice of Appeal

Reg. No. 54,919
Greenberg Traurig, LLP
1144 15th Street, Suite 3300
Denver, CO 80202
T: (303) 685-7418
Counsel for Petitioner

CERTIFICATES OF FILING AND SERVICE

I hereby certify that this Notice of Appeal was electronically filed using the Patent Trial and Appeal Case Tracking System (P-TACTS) on December 6, 2024.

In accordance with 37 C.F.R. §90.2 and the instructions provided on the United States Patent and Trademark Office's web page for the Office of the General Counsel (<https://www.uspto.gov/about-us/organizational-offices/office-general-counsel>), I hereby further certify that, on December 6, 2024, a true and correct copy of this Notice of Appeal was caused to be electronically filed with the Director by email sent to the following email address: efileSO@uspto.gov.

I hereby further certify that, on December 6, 2024, a true and correct copy of this Notice of Appeal is being sent via Priority Mail Express to the following address:

Office of the Solicitor
United States Patent and Trademark Office
Mail Stop 8
P.O. Box 1450
Alexandria, VA 22313

I hereby further certify that, on December 6, 2024, and pursuant to Federal Circuit Rules 15(a)(1) and 25(b)(1), a true and correct copy of this Notice of Appeal is being filed electronically by CM/ECF, with the \$600 filing fee being paid through pay.gov, with the United States Court of Appeals for the Federal Circuit.

I hereby further certify that, on December 6, 2024, this Notice of Appeal is being served upon the following counsel of record for Patent Owner via electronic mail:

- dhoffman@nolanheimann.com
- rkatz@katzfirm.com

Dated: December 6, 2024

By: /Heath J. Briggs/
Reg. No. 54,919
Greenberg Traurig, LLP
1144 15th Street, Suite 3300
Denver, CO 80202
Counsel for Petitioner

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUASAR SCIENCE LLC,
Petitioner,

v.

COLT INTERNATIONAL CLOTHING, INC. d/b/a COLT LED,
Patent Owner.

IPR2023-00614
Patent 10,566,895 B1

Before GEORGIANNA W. BRADEN, ZHENYU YANG, and
ROBERT J. WEINSCHENK, *Administrative Patent Judges*.

YANG, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Quasar Science LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”), seeking an *inter partes* review of claims 1–3, 6–18, 21–24, and 27–29 of U.S. Patent No. 10,566,895 B1 (Ex. 1001, “the ’895 patent”).

Colt International Clothing, Inc. d/b/a Colt LED (“Patent Owner”) filed a Patent Owner Preliminary Response. Paper 6 (“Prelim. Resp.”). We instituted trial to review the challenged claims (Paper 8, “DI”).

Thereafter, Patent Owner filed a Response to the Petition (Paper 28, “PO Resp.”), Petitioner filed a Reply to Patent Owner’s Response (Paper 52, “Reply”), and Patent Owner filed a Sur-reply to Petitioner’s Reply (Paper 66, “Sur-reply”).

An oral hearing for this proceeding was held on July 16, 2024, and the transcript of that hearing is of record. *See* Paper 69 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6 and issues this Final Written Decision pursuant to 35 U.S.C. § 318 and 37 C.F.R. § 42.73. For the reasons provided below, we find Petitioner has not shown by a preponderance of the evidence the unpatentability of the challenged claims.

A. *Real Parties in Interest*

Petitioner states that, in addition to itself, Videndum Production Solutions, Inc., Videndum US Holdings Inc., Videndum Holdings, Ltd., Videndum Investments Limited, Videndum Group Holdings, Ltd., and Videndum plc are also real parties in interest. Pet. 4. Patent Owner identifies itself as the only real party in interest. Paper 3, 2.

B. Related Matters

According to the parties, the '895 patent is the subject of *Colt International Clothing, Inc. d/b/a Colt LED v. Quasar Science LLC*, No. 22-cv-00213 (D. Del.). Pet. 5; Paper 3, 2.

Petitioner also filed IPR2023-00611 and IPR2023-00614, challenging patents related to the '895 patent. In IPR2023-00611, we granted Patent Owner's Request for Adverse Judgment in view of the statutory disclaimer of all claims challenged therein. IPR2023-00611, Paper 61. We concurrently enter a final written decision in IPR2023-00613, determining Petitioner has not shown the unpatentability of any claim challenged therein by a preponderance of the evidence. IPR2023-00613, Paper 72.

C. The '895 Patent and Related Background

The '895 patent relates to “a lighting system comprising a tube light with an improved LED array capable of producing light within at least two predetermined color temperature ranges.” Ex. 1001, 1:20–23.

According to the '895 patent, the two most frequently used and desired color temperature ranges in the lighting industry for stage and set lighting have been found to be 3050 to 3300 K for tungsten (warm white), and 5400 to 5600 K for daylight white. *Id.* at 2:3–7. The '895 patent states that when “accurate and suitable lighting color temperature is vital, lighting ‘gels’ are often used in conjunction with fluorescent lamps to produce the desired color temperature.” *Id.* at 2:10–13. Otherwise, “a lighting crew must continually change the fluorescent lamps between daylight white (or day white) colored lamps and tungsten (or warm white) colored lamps, or if desired, other types of white/light colored lamps.” *Id.* at 2:31–35.

According to the '895 patent, “[w]hat is desired is a lighting solution suitable for the lighting industry implementing the advantages of LED lights which allows for evenly dispersed light controllable within specific color temperature parameters without the need to physically switch out colored gels or lamp modules.” *Id.* at 3:6–10. To achieve this, the '895 patent describes “LED lighting systems configured to produce at least two different ranges of color temperature light, utilizing a first type of LED bulbs configured to provide a first color temperature range light and a second type of LED bulbs configured to provide a second color temperature range light.” *Id.* at 4:66–5:5. The light system also may include circuitry configured such that only one group of LEDs can be turned on at a time. *Id.* at 5:58–60.

D. Illustrative Claim

Of the challenged claims, claims 1, 16, and 23 are independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. An LED light system configured for providing broad-spectrum white light suitable for a commercial image recording, in a form factor of a fluorescent light tube lamp, the LED light system comprising:
 - a. a housing having ends and including a support structure in a form of an elongated and narrow surface having a top side and a bottom side;
 - b. a plurality of first LEDs mounted on the top side of the support structure and configured to emit broad-spectrum white light in a first predetermined Kelvin temperature range of cool white light;
 - c. a plurality of second LEDs mounted on the top side of the support structure and configured to emit broad-spectrum white light in a second predetermined Kelvin temperature range of warm white light;
 - d. circuitry mounted to the support structure including an LED driver circuit configured for driving (i) the first LEDs, to

provide light in the first predetermined Kelvin temperature range; or (ii) the second LEDs, to provide light in the second predetermined Kelvin temperature range, wherein the first and second predetermined Kelvin temperature ranges are nonoverlapping, and including a printed circuit board mounted to the support structure for carrying electrical power from a connection to the LED driver circuit and then to the first and second LEDs;

e. an elongate cover extending substantially a length of the support structure and covering the top side of the support structure for diffusing light emitted by the first and second LEDs; and

f. wherein the housing and cover together have an elongate linear form factor,

g. wherein the LED light system is configured for receiving input power to be provided to the LED driver circuit to selectively light the first or second LEDs,

h. wherein the first and second LEDs are disposed in a plurality of rows distributed along the length of the top side of the support structure to emit light, when selectively lit by the LED driver circuit, along the length of the top side of the support structure,

i. wherein the light is diffused by the cover and is suitable for the commercial image recording both when the emitted light from the LED light system is in the first temperature range of cool white light and when the emitted light from the LED light system is in the second temperature range of warm white light, and

j. wherein the light emitted from the LED light system is suitable for the commercial image recording when said emitted light: (i) is at least 1000 lumens when the first LEDs are lit and is also at least 1000 lumens when the second LEDs are lit; (ii) is broad-spectrum white light having a color deviation corresponding to less than five points of green and less than five points of magenta (5M, 5G) of color compensation (CC), and (iii) has a color rendering index of light emitted from each of the first LEDs or each of the second LEDs, whichever

respective plurality of first or second LEDs is lit, that is greater than 90.

Ex. 1001, 12:5–62.

E. Instituted Challenges to Patentability

We instituted trial to based on the following challenges:

Claims Challenged	35 U.S.C. §	References
1–3, 6–18, 21–24, 27–29	103	Kit, ¹ Ianiro, ² Ducharme, ³ Katzir ⁴
1–3, 6–18, 21–24, 27–29	103	Ducharme, Ianiro, Katzir, Hasnain ⁵

Petitioner relies on the declarations of Fred Holmes (Ex. 1003, “Holmes Declaration”; Ex. 1049, “Holmes Supplemental Declaration”) and the declaration of Raymond Gonzales (Ex. 1059).

Patent Owner relies on the declarations of Todd Csernecky (Ex. 2041), Kevin Baxter (Ex. 2047), Fernando Silva (Ex. 2066), Bruce Wonderlick (Ex. 2067), Guillermo Macias (Ex. 2068), Bradley W. Brunon (Ex. 2078), Gary R. Allen, Ph.D. (Ex. 2080), and Ken Fisher (Ex. 2100).⁶

¹ US 7,507,001 B2, issued Mar. 24, 2009 (Ex. 1004, “Kit”).

² WO 2009/063520 A1, published May 22, 2009 (Ex. 1007, “Ianiro”).

³ US 7,350,936 B2, issued Apr. 1, 2008 (Ex. 1005, “Ducharme”).

⁴ US 2010/0102729 A1, published Apr. 29, 2010 (Ex. 1006, “Katzir”).

⁵ US 8,668,361 B2, issued Mar. 11, 2014 (Ex. 1008, “Hasnain”).

⁶ Patent Owner also submitted the declaration of Bruce L. Finn. Ex. 2094 (“Finn Declaration”). Later, the parties jointly requested that we expunge the Finn Declaration. Paper 56, 2. To maintain the record for a potential appeal, we do not expunge the Finn Declaration. We, however, assign no weight to the Finn Declaration and any citations thereto in Patent Owner’s Response.

II. ANALYSIS

A. *Principles of Law*

To prevail in this *inter partes* review, Petitioner “shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.” 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A patent claim is unpatentable under 35 U.S.C. § 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 evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *KSR*, 550 U.S. at 406.

An invention is not obvious just because all of the elements that comprise the invention were known in the prior art. *KSR*, 550 U.S. at 418 (“[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.”). Rather, “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* Thus, a party that petitions the Board for a determination of unpatentability based on obviousness must show that “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed

invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (citations omitted).

We analyze the instituted challenges to patentability in accordance with these principles.

B. Claim Construction

In an *inter partes* review, we construe a claim term “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2020). Under that standard, the words of a claim “are generally given their ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

The parties agree that, for purposes of this Decision, no claim term needs specific construction beyond its plain and ordinary meaning. Pet. 14; PO Resp. 10.

Claim terms need only be construed to the extent necessary to resolve the controversy. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). On this record and for purposes of this Decision, we see no need to expressly construe any claim term.

C. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active

workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Furthermore, the prior art itself can reflect the appropriate level of ordinary skill in the art. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Here, Petitioner argues that a person of ordinary skill in the art (“POSITA”) would have had “at least a Bachelor of Science degree in electrical engineering, or a closely related field, along with at least two years of experience in the design of entertaining lighting systems, and the design and use of LEDs.” Pet. 14 (citing Ex. 1003 ¶ 32).

Patent Owner argues that a POSITA would have had “2 to 4 years’ experience in electrical engineering/design of film and television lighting systems, including the design and use of LED lights, combined with two to three years of work experience as a set lighting technician in television and/or motion picture industry.” PO Resp. 9 (citing Ex. 2047 ¶¶ 16–17; Ex. 2100 ¶¶ 156–161).

Patent Owner does not identify any specific instance in which the differences between the parties’ respective descriptions of the level of ordinary skill in the art impacts the analysis or conclusions of either party, or either party’s declarant, in this case. In fact, Patent Owner acknowledges that any differences between the parties’ respective descriptions do not impact the conclusions in this case. *Id.* (“Regardless of which definition of a POSITA is applied, the conclusion(s) would be the same.”).

For purposes of this Decision, and to the extent necessary, we adopt Petitioner’s definition of a POSITA because it is consistent with the prior art’s demonstration of the skill level at the time of the invention.

D. Prior Art Disclosures

Kit is directed to “[a]n energy saving device for an LED lamp mounted to an existing fixture for a fluorescent lamp.” Ex. 1004, Abstract. It teaches replacing fluorescent lights with LEDs to achieve energy savings for “general lighting fixtures.” *Id.* at 13:34–38, 16:4–9.

Ducharme is directed to “LED-based light bulbs having one or more white LEDs, for replacing/retrofitting conventional light bulbs.” Ex. 1005, Abstract. It teaches that “the color temperature and/or CRI of light is critical to creators of images, such as photographers, film and television producers, painters.” *Id.* at 4:1–3. Ducharme teaches a LED-based light bulb, comprising at least one first white LED to generate first radiation having a first spectrum, and at least one second LED to generate second radiation having a second spectrum different than the first spectrum. *Id.* at 33:62–67. According to Ducharme, when “CRIs measure in the high 90s,” the light “may be characterized as high-quality.” *Id.* at 25:42–43.

Katzir is directed to a lighting assembly that “can replace a fluorescent tube light while providing a more comfortable and steady light source, consuming less power and with enhanced longevity.” Ex. 1006, Abstract. It teaches “[t]he lighting assembly include a tube, a light emitting diode [LED] panel disposed within the tube, a circuit board disposed within the tube, and insulation disposed between the [LED] panel and the circuit board.” *Id.*

Ianiro teaches “[a]n optimization technique of the balancing of the color temperature parameters in a lighting body formed by the assembly of selected LEDs.” Ex. 1007, Abstract. It teaches a “mixture” of LEDs that “produces balancing suitable for the Red - Blue correction at a color

temperature of 5500° K, a chromatic color correction for the remaining excess Blue and a compensation for the Green - Magenta ratio for obtaining a measure deviation not greater than 5 CC degrees.” *Id.* at 7:11–15.

Hasnain is directed to an LED-based replacement for fluorescent light source. Ex. 1008, code (54). According to Hasnain, such “an LED replacement light source needs to generate 70 to 100 lumens per inch of light source.” *Id.* at 7:65–66. At the time of Hasnain’s invention, “white light sources based on GaN blue emitting LEDs generate 70 to 100 lumens per watt.” *Id.* at 8:1–3.

E. Alleged Obviousness over Kit, Ianiro, Ducharme, and Katzir

Petitioner asserts that claims 1–3, 6–18, 21–24, and 27–29 would have been obvious over the combination of Kit, Ianiro, Ducharme, and Katzir. Pet. 14–47. After reviewing the entire record developed at trial, and as explained below, we determine Petitioner has not shown by a preponderance of the evidence that the challenged claims would have been obvious over the asserted prior art.

1. Claim 1

a. Limitations 1.b. and 1.c.

We focus our analysis on claim 1. Claim 1 recites an “LED light system” comprising “a plurality of first LEDs . . . configured to emit broad-spectrum white light in a first predetermined Kelvin temperature range of cool white light” (limitation 1.b.), and “a plurality of second LEDs . . . configured to emit broad-spectrum white light in a second predetermined Kelvin temperature range of warm white light” (limitation 1.c.). We determine that Petitioner does not show sufficiently that the combination of the asserted prior art teaches limitations 1.b. and 1.c.

Petitioner relies on Kit for teaching a plurality of LED arrays “configured to emit broad-spectrum white light in various predetermined Kelvin temperature ranges, including cool and warm white light.” Pet. 24 (citing Ex. 1003 ¶¶ 113–115; Ex. 1004, 3:20–38, 22:9–35).

Patent Owner counters that Petitioner does not show sufficiently that the combination of Kit, Ianiro, Ducharme, and Katzir teaches an LED light system with first LEDs configured to emit cool white light and second LEDs configured to emit warm white light. PO Resp. 39–40. Specifically, Patent Owner contends that “Kit lacks any disclosure of a bicolor luminaire with cool white and with warm white LEDs.” *Id.* at 39. According to Patent Owner, Kit teaches “matching LEDs to get a consistent color temperature output,” not providing “both cool white and warm white LEDs in the same luminaire.” *Id.* at 40 (citing Ex. 1004, 3:28–31, 3:33–36, 3:53–56). On this record, we agree with Patent Owner.

Kit teaches that

[t]he solution to the wide manufacturing tolerances for achieving a consistent color temperature and intensity was to introduce color-matched white Luxeon Lamps, each containing multiple white Luxeon LEDs that are selected by advanced binning algorithms. By correctly combining an appropriate mix of LEDs, the Luxeon Lamps themselves have well-controlled and consistent color temperatures of 3200K (warm white), 4100K (commercial white) *or* 5500K (cool white).

Ex. 1004, 3:28–36 (emphasis added). We read this passage, which Petitioner relies on, as teaching a light with LEDs that produce a single, consistent temperature, and not, as Petitioner argues, a light having both cool white LEDs and warm white LEDs. *See* Pet. 24.

Petitioner cites another portion of Kit to support its argument that Kit teaches a light having both cool white LEDs and warm white LEDs. *See id.*

(citing Ex. 1004, 22:9–35). There, however, Kit teaches a single warm white LED (Ex. 1004, 22:9–21) and an “alternate arrangement” using “white color LEDs with a combination of yellow or amber color LEDs” (*id.* at 22:21–25). Again, Petitioner does not explain specifically how this portion of Kit teaches an LED light system with first LEDs configured to emit cool white light and second LEDs configured to emit warm white light.

According to Petitioner, “Kit discloses that each array of LEDs may be independently controlled by a computer and microprocessor to govern the power each array receives.” Pet. 24 (citing Ex. 1004, 121:7–38). Although the portion of Kit that Petitioner relies on mentions “multiple LED arrays,” it does not indicate that those LED arrays include first LEDs configured to emit cool white light and second LEDs configured to emit warm white light. *See* Ex. 1004, 121:32–36.

b. Reason to Combine Kit and Katzir

We also determine that Petitioner does not show sufficiently that it would have been obvious to combine the cited teachings of Kit and Katzir. Petitioner argues that “Katzir further discloses daylight and tungsten temperature ranges within the claimed temperature ranges.” Pet. 24 (citing Ex. 1006 ¶¶ 53, 54, Figs. 5A, 5B). Petitioner relies on the Holmes Declaration to show that “[a] POSITA would have been motivated to look to Katzir to design an LED array to be retrofit in a fluorescent tube.” *Id.* at 19 (citing Ex. 1003 ¶ 102).

Mr. Holmes testifies that

[b]oth Kit and Katzir teach using LEDs of various colors in a fluorescent tube form factor, like a T8 or T12 fluorescent tube. Katzir also discloses various LED array layouts that a POSITA would have looked to when designing an LED tube lighting like that disclosed in Kit. A POSITA would have had strong

motivation to look to Katzir to design an LED array to be retrofit in a fluorescent tube form factor.

Ex. 1003 ¶ 102 (internal citations omitted). As discussed above, however, the cited passages of Kit describe a light with LEDs that produces a single, consistent temperature of warm white, commercial white, or cool white.

Ex. 1004, 3:28–36, 22:9–25. Neither Petitioner nor Mr. Holmes sufficiently explains why a POSITA would have modified Kit to include Katzir’s particular layout that includes both cool white LEDs and warm white LEDs. *See* Pet. 19, 24; Ex. 1003 ¶ 102; *In re Nuvasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016) (instructing that we must articulate a *reason why* a POSITA would combine the prior art references).

We identified the aforementioned deficiencies for this asserted challenge in the Decision on Institution. DI 21–23. Petitioner did not address those deficiencies in the Reply. *See generally* Reply; Tr. 6:16–7:10. Thus, based on the entire record developed at trial, and for the foregoing reasons, Petitioner has not shown that claim 1 would have been obvious over Kit, Ianiro, Ducharme, and Katzir.

2. Claims 2, 3, 6–18, 21–24, and 27–29

Each of independent claims 16 and 23 recites limitations similar to limitations 1.b. and 1.c. Ex.1001, 13:58–65, 14:62–15:2. Petitioner’s arguments and evidence for claims 16 and 23 do not compensate for the deficiencies discussed above for claim 1. *See* Pet. 39–46. Thus, for the same reasons discussed above for claim 1, Petitioner does not show sufficiently that claims 16 and 23 would have been obvious over Kit, Ianiro, Ducharme, and Katzir.

Each of claims 2, 3, 6–15, 17, 18, 21, 22, 24, and 27–29 depends, directly or indirectly, from claim 1, 16, or 23. Petitioner’s arguments and

evidence for these claims do not compensate for the deficiencies discussed above for claims 1, 18, and 23. *See* Pet. 35–39, 41–42, 46–47. Thus, for the same reasons discussed above for claims 1, 16, and 23, Petitioner does not show sufficiently that claims 2, 3, 6–15, 17, 18, 21, 22, 24, and 27–29 would have been obvious over Kit, Ianiro, Ducharme, and Katzir.

3. Summary

In sum, Petitioner has not shown by a preponderance of the evidence that claims 1–3, 6–18, 21–24, and 27–29 would have been obvious over the combination of Kit, Ianiro, Ducharme, and Katzir.

F. Alleged Obviousness over Ducharme, Ianiro, Katzir, and Hasnain

Petitioner asserts that claims 1–3, 6–18, 21–24, and 27–29 would have been obvious over the combination of Ducharme, Ianiro, Katzir, and Hasnain. Pet. 47–75. After reviewing the entire record developed at trial, and as explained below, we determine Petitioner has not shown by a preponderance of the evidence that the challenged claims would have been obvious over the asserted prior art.

1. Claim 1

a. Reason to Combine Ducharme and Hasnain

We, again, focus our analysis on claim 1. Claim 1 recites an “LED light system . . . in a form factor of a fluorescent light tube lamp,” comprising “a housing having ends and including a support structure in a form of an elongated and narrow surface having a top side and a bottom side” (limitation 1.a.), and “an elongate cover extending substantially a length of the support structure and covering the top side of the support

structure for diffusing light emitted by the first and second LEDs”
(limitation 1.e.).

Petitioner asserts that Ducharme teaches these limitations. Pet. 52–53 (citing Ex. 1005, 5:7–33, 12:49–53, 29:16–60, Figs. 5a, 5b, 29), 57–58 (citing Ex. 1005, 12:3–15, Fig. 29). In particular, Petitioner asserts that Ducharme teaches a housing with a lower section and an upper section that enclose an LED lighting platform. *Id.* at 53.

Claim 1 also recites limitation 1.j.:

wherein the light emitted from the LED light system is suitable for the commercial image recording when said emitted light:
(i) is at least 1000 lumens when the first LEDs are lit and is also at least 1000 lumens when the second LEDs are lit; (ii) is broad-spectrum white light having a color deviation corresponding to less than five points of green and less than five points of magenta (5M, 5G) of color compensation (CC), and (iii) has a color rendering index of light emitted from each of the first LEDs or each of the second LEDs, whichever respective plurality of first or second LEDs is lit, that is greater than 90.

Petitioner asserts that Hasnain teaches an LED light system that emits at least 1000 lumens. Pet. 62–63 (citing Ex. 1003 ¶¶ 350–351; Ex. 1008, 4:2–3, 4:37–43). Petitioner asserts that Ianiro teaches an LED light system with a color deviation of less than five points of green and less than five points of magenta (“5M, 5G”) of color compensation, and Ducharme and Ianiro each teach an LED light system with a color rendering index (“CRI”) greater than 90. *Id.* at 61–63 (citing Ex. 1003 ¶¶ 348–349, 352–353; Ex. 1005, 4:1–5, 4:14–18, 25:36–43; Ex. 1007, 2:25–3:1, 3:17–19, 7:11–15).

Petitioner argues that a POSITA would have had reason to combine the teachings of asserted prior art and would have had a reasonable expectation of success in doing so. *Id.* at 47–51 (citing Ex. 1003

¶¶ 307–320). Specifically, Petitioner contends that “based on the teachings of Ducharme, a POSITA would have known that it was of critical importance to have lighting systems capable of emitting light with a high CRI, minimal deviation from green and magenta (preferably 0), and a high lumen output.” *Id.* at 49 (citing Ex. 1003 ¶¶ 307–310). According to Petitioner,

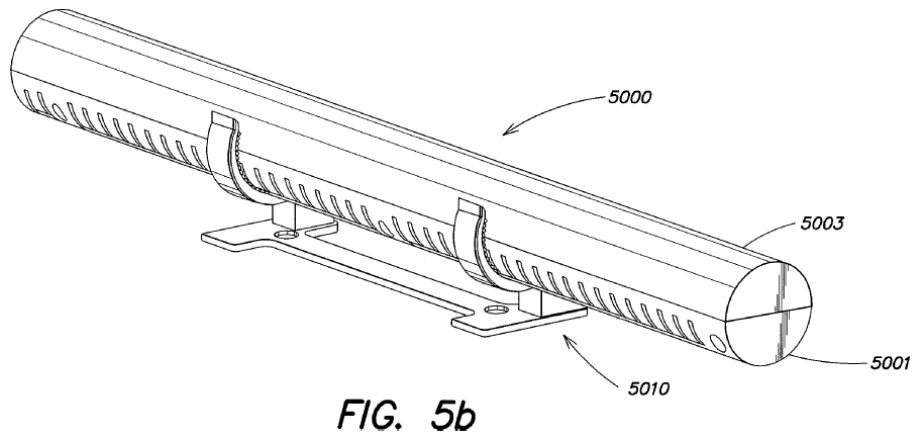
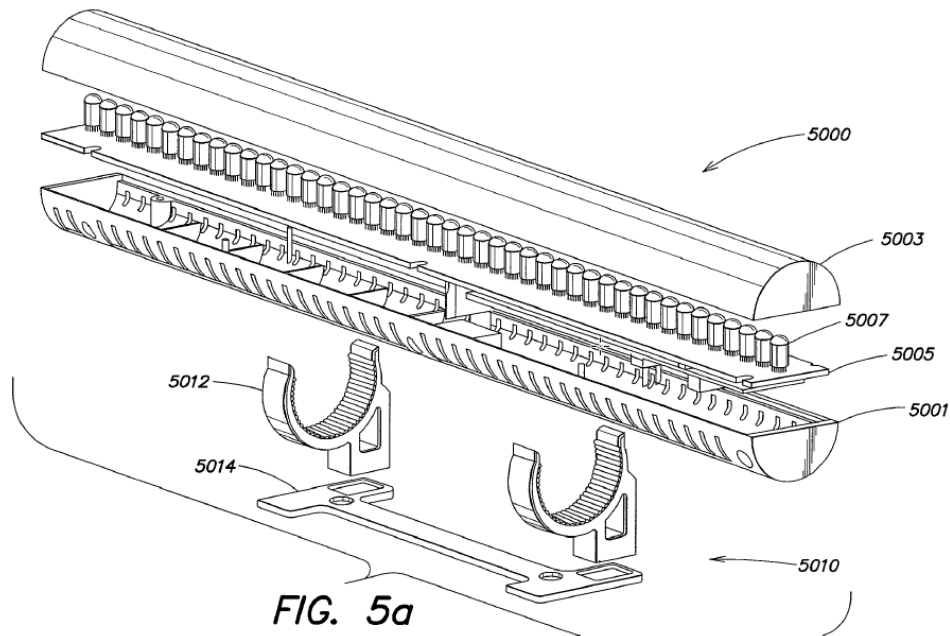
[a] POSITA would have been motivated to utilize the teachings of Katzir, Ianiro, and Hasnain to create the LED lighting device disclosed in Duchame capable of selectively electronically switching between two predetermined color temperatures of broad-spectrum white light with a high (greater than 90) CRI and less than five points of deviation of green and magenta color compensation, with each predetermined color temperature emitting greater than 1000 lumens.

Id. at 50 (citing Ex. 1003 ¶¶ 313–315).

Patent Owner argues that Petitioner does not show sufficiently that it would have been obvious to combine the cited teachings of Ducharme and Hasnain. PO Resp. 22–39. Specifically, Patent Owner contends that a person of ordinary skill in the art “would not combine any teaching of wattage . . . of Hasnain . . . with the teachings of Ducharme” because Ducharme teaches a “linear, tube-like form factor,” whereas “a critical part of Hasnain’s structure is to provide no cover, i.e., open-air for cooling the LEDs.” *Id.* at 31. Patent Owner contends that using the wattage suggested for Hasnain’s “open-air” device inside Ducharme’s tubular housing would increase the LEDs’ temperature and degrade the LEDs’ lumen output, color deviation, and CRI. *Id.* at 27–28, 30–31.

On this record, we agree with Patent Owner that Petitioner does not show sufficiently that a POSITA would have had a reason to combine the specific cited teachings of Ducharme and Hasnain.

Petitioner relies on Ducharme's Figures 5a, 5b, and 29 as teaching a housing and cover having a fluorescent light tube form factor. Pet. 52–53, 57–58. Ducharme's Figures 5a and 5b are reproduced below.



Ducharme's Figures 5a and 5b show a housing with lower body section 5001 and upper body section 5003 that enclose lighting platform 5005.⁷ *Id.* at 12:49–53, Figs. 5a, 5b. Petitioner asserts that lower

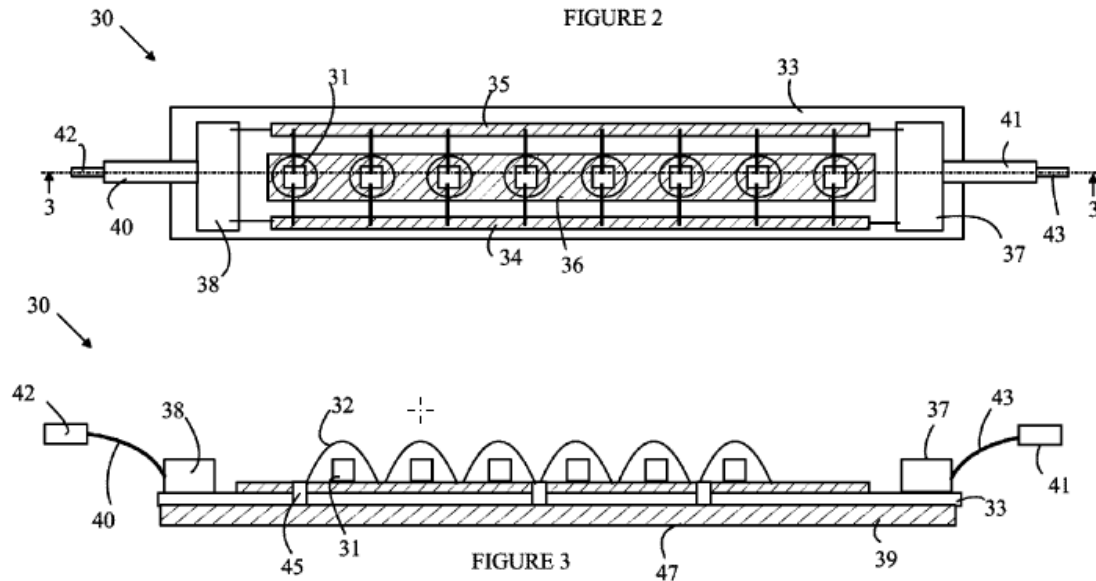
⁷ Ducharme's Figure 29 shows a similar housing. Pet. 52–53; Ex. 1005, 29:16–36, Fig. 29.

body section 5001 and upper body section 5003 teach a housing and cover having a fluorescent light tube form factor. Pet. 52–53, 57–58.

Petitioner relies on Hasnain as teaching an LED light system that emits at least 1000 lumens. Pet. 62–63. Petitioner points to Hasnain’s teaching that “white light sources based on GaN blue emitting LEDs generate 70 to 100 lumens per watt.” *Id.* at 62 (citing Ex. 1008, 4:2–3). Ultimately, Petitioner concludes that “even assuming using LEDs capable of emitting 70 lumens per watt, an LED lamp having an elongated forty-four inch long and one-inch wide circuit board would be able to produce 1,540 lumens from just 22 watts, and up to 3,080 lumens at 44 watts.” *Id.* at 63 (citing Ex. 1003 ¶¶ 350–351).

To reach this conclusion, and specifically, the watts used in the calculation, Petitioner relies on Hasnain for teaching heat-dissipating structure and additional heat-dissipating surface. *Id.* at 62 (citing Ex. 1008, 4:37–43). Hasnain teaches that “if the LEDs are spaced apart along the length of heat-dissipating structure 36, between 0.5 and 1 watt of heat per square inch of surface area can be dissipated without raising the temperature of the LEDs by more than 30° C. above ambient.” Ex. 1008, 4:37–40. Hasnain also teaches that “if additional heat dissipation is required, an additional heat-dissipating surface 47 on the backside of the light source can be utilized.” *Id.* at 4:41–43. Petitioner argues that, based on these teachings, “on an almost one-inch wide printed circuit board . . . within a fixture having a length of four feet . . . , there exists at least 44 square inches of surface area to dissipate heat, such that up to 44 watts can be dissipated without the necessity of additional heat sinks.” Pet. 62–63.

Hasnain describes heat-dissipating structure 36 and additional heat-dissipating structure 47 in connection with Figures 2 and 3. Ex. 1008, 3:36–38, 4:23–43. Hasnain’s Figures 2 and 3 are reproduced below.



Figures 2 and 3 show LED light source 30 with LEDs 31, heat-dissipating structure 36, and additional heat-dissipating structure 47. *Id.* at 3:39–41, 4:23–28, 4:41–43. They also show LED light source 30 without a tubular housing. According to Hasnain, “the LEDs are distributed on heat-dissipating structure 36 such that the surface area presented by the heat-dissipating structure is sufficient to dissipate a significant fraction of the heat of each LED to the surrounding air.” *Id.* at 4:23–28.

Hasnain teaches that additional heat-dissipating structure 47 can transfer heat to the air if the light source is suspended. *Id.* at 4:51–57. Alternatively, if the light source is mounted, surface 47 can transfer heat via “thermal contact with the back wall of the existing fluorescent tube enclosure.” *Id.* at 4:58–64. Hasnain illustrates this “existing” structure in Figure 4, reproduced below.

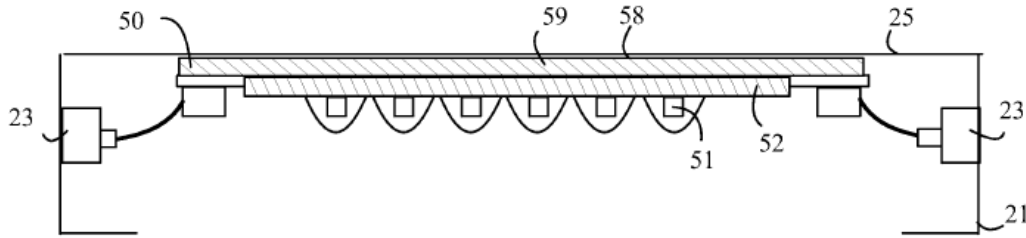


FIGURE 4

Figure 4 shows LED light source 50 with heat-dissipating structure 59⁸ mounted in enclosure 21. *Id.* at 4:61–5:6, Fig. 4. “Heat-dissipating structure 59 has a surface 58 that is in thermal contact with wall 25 of enclosure 21 when light source 50 is mounted in enclosure 21.” *Id.* at 5:3–6. Here, enclosure 21 is not a fluorescent light tube, but an existing structure that a fluorescent light tube is “inserted into.” *Id.* at 2:50–56, 4:58–61, Fig. 1A. It “provide[s] the power for operating the fluorescent tube[.]” *Id.* LED light source 50 does not have a tubular housing.

Thus, Petitioner’s assertion that Hasnain’s LED light emits at least 1000 lumens requires distributing LEDs on a heat-dissipating structure that transfers heat to the surrounding air or via thermal contact with another existing structure. Petitioner, however, does not explain how Hasnain’s heat-dissipating structure would work when combined with Ducharme’s tubular housing.

In particular, Petitioner does not explain how Hasnain’s heat-dissipating structure would dissipate sufficient heat to the surrounding air when enclosed in Ducharme’s tubular housing. Petitioner does not

⁸ Figure 4 shows heat-dissipating structure 59, not heat-dissipating structure 47. Ex. 1008, Fig. 4. Hasnain, however, describes those structures similarly. *Id.* at 4:51–5:6.

propose combining Ducharme and Hasnain so that Hasnain's heat-dissipating structure is in thermal contact with Ducharme's tubular housing. Petitioner also does not explain how Hasnain's heat-dissipating structure would dissipate sufficient heat via thermal contact with another existing structure when enclosed in Ducharme's tubular housing. Thus, Petitioner does not show sufficiently how the proposed combination of Ducharme and Hasnain would work.

Petitioner asserts that Mr. Holmes cited Hasnain's heat dissipation techniques. Reply 10 (citing Ex. 1003 ¶ 490; Ex. 1049 ¶¶ 41–49). Paragraph 490 of Exhibit 1003 relates to Ducharme, not Hasnain, and thus, does not support Petitioner's argument. Although paragraphs 41 to 49 of Exhibit 1049 span more than seven pages, other than the single citation in the Reply, Petitioner does not discuss any of the testimony presented therein. We, thus, do not consider this portion of the Holmes Supplemental Declaration. *See* 37 C.F.R. §§ 42.6(a)(3).

Furthermore, we would not be persuaded by Mr. Holmes' testimony even if we considered it. For example, Mr. Holmes testifies that Hasnain's heat-dissipating structure "a variety of heat dissipating techniques are disclosed by Hasnain, any one of which could readily be used in a T12 form factor LED light, as expressly recognized by Hasnain." Ex. 1049 ¶ 46. We disagree with Mr. Holmes that Hasnain teaches enclosing its heat-dissipating structure in a fluorescent light tube.

Hasnain teaches "a replacement LED light source for fluorescent tube 22 [that] plug[s] into the same connectors and operate[s] from the voltage patterns generated by the ballasts." Ex. 1008, 3:23–26. Hasnain also teaches that "the replacement LED light source has a plurality of LEDs

mounted on a heat-dissipating substrate that has a width that is less than or equal to the diameter of the fluorescent tube that the light source is designed to replace.” *Id.* at 5:52–56. Thus, Hasnain teaches that its LED light fits into, and connects with, an existing structure that previously held a fluorescent light tube. *Id.* at 2:50–56, 3:23–26, 4:58–64, 5:52–56, Figs. 1A, 4. As discussed above, however, Hasnain’s heat-dissipating structure is not enclosed in a tubular housing in order to dissipate heat to the surrounding air or via thermal contact with the existing structure that a fluorescent light tube is inserted into. *Id.* at 2:50–56, 4:23–28, 4:51–64, Figs. 1A, 3, 4.

Mr. Holmes also mentions Hasnain’s cylindrical lens and Ducharme’s air slots. Ex. 1049 ¶¶ 45, 48. Mr. Holmes’s reliance on Hasnain’s cylindrical lens is unavailing. Hasnain’s Figure 5 shows cylindrical lens 61 mounted above LEDs 31. Ex. 1008, 6:48–58, Fig. 5. But the LED light in Figure 5 does not include a bottom enclosure. Thus, Hasnain’s additional heat-dissipating structure could still dissipate sufficient heat when suspended above or placed in thermal contact with another existing structure. *Id.* at 4:52–64. In contrast, as discussed above, Petitioner does not explain how Hasnain’s heat-dissipating structure would work when combined with Ducharme’s tubular housing.

Mr. Holmes’s reliance on Ducharme’s air slots also is unavailing. Mr. Holmes states that Ducharme’s air slots would “allow for airflow through Ducharme’s T12 LED tubes, which would further enhance heat dissipation.” Ex. 1049 ¶ 48. But Petitioner does not identify specific evidence indicating that Ducharme’s air slots could have been used instead of Hasnain’s heat-dissipating structure to achieve Hasnain’s lumen output

and also maintain a color deviation less than 5M, 5G and a CRI greater than 90. *See* Ex. 1039, 107:4–9 (“I know it to be ineffective.”).

b. Petitioner’s Arguments

Petitioner presents several arguments regarding its proposed combination. Reply 7–17. First, Petitioner asserts that neither the written description nor the claims of the ’895 patent mention heat dissipation. *Id.* at 7–8 (citing Ex. 1043, 195:13–16), 16. According to Petitioner, “[b]ecause the alleged ‘thermal issues’ are not recited in the Challenged Claims or even the ’895 patent, they are of no moment to the patentability of the Challenged Claims.” *Id.* at 8.

Petitioner’s argument is unavailing. Petitioner bears the burden of demonstrating by a preponderance of the evidence that a POSITA would have found it obvious to combine the cited teachings of Ducharme and Hasnain. Here, Petitioner proposes combining Ducharme’s tubular housing with Hasnain’s lumen output. Pet. 49–50, 52–53, 57–58, 62–63. As discussed above, Petitioner’s assertion that Hasnain’s LED light emits at least 1000 lumens requires Hasnain’s heat-dissipating structure 36 and potentially heat-dissipating structure 47. *Id.* at 62–63. But Petitioner does not explain how Hasnain’s heat-dissipating structure would work when combined with Ducharme’s tubular housing.

Furthermore, the evidence of record indicates that heat dissipation is relevant to claim 1. Claim 1 requires an LED light system that emits light of at least 1000 lumens, a color deviation of less than 5M, 5G, and a CRI greater than 90. Ex. 1001, 12:51–62. The evidence of record indicates that using the wattage suggested by Hasnain (i.e., 22W to 44W) inside Ducharme’s tubular housing without sufficient heat dissipation would

increase the LEDs' temperature. Ex. 1039, 97:13–16; Ex. 2047 ¶ 46; Ex. 2080 ¶¶ 49–51; Ex. 2100 ¶¶ 73–75, 85; Tr. 23:3–15. The evidence of record also indicates that increased temperatures can degrade the LEDs' lumen output, color deviation, and CRI. Ex. 2047 ¶¶ 31–32, 61–62; Ex. 2080 ¶¶ 60–61; Ex. 2100 ¶¶ 69–72. Thus, whether Hasnain's heat-dissipating structure would dissipate sufficient heat when combined with Ducharme's tubular housing is relevant to the limitations of claim 1.

Second, Petitioner asserts that the proposed combination does not involve “combining Hasnain's open tube into Ducharme's design.” Reply 9. Petitioner states that it “does not rely upon Hasnain for its teaching of an uncovered LED light system, but merely cites to Hasnain to show an expected lumens per watt output for a typical T12 LED device.” *Id.* at 8–9 (citing Pet. 62). Petitioner's argument is unavailing. As discussed above, Petitioner's assertion that Hasnain's LED light emits at least 1000 lumens requires Hasnain's heat-dissipating structure 36 and potentially heat-dissipating structure 47. Pet. 62–63. Thus, Petitioner cannot rely on Hasnain's lumen output without explaining how Hasnain's heat-dissipating structure would work when combined with Ducharme's tubular housing.

Third, Petitioner asserts that “[t]he thermal concerns raised by Patent Owner were known to those of skill in the art,” and “would have been nothing more than a trivial concern or a routine design consideration.” Reply 10, 16 (citing Ex. 1039, 75:4–14; Ex. 1049 ¶¶ 33–40). Petitioner's argument is unavailing. Petitioner's asserted challenge to patentability does not rely on any well-known, “trivial,” or “routine” considerations for addressing heat dissipation. Rather, Petitioner relies on Hasnain's particular heat-dissipating structure. *See* Pet. 62–63 (citing Ex. 1008, 4:37–43). And,

as discussed above, Petitioner does not explain how Hasnain's heat-dissipating structure would work when combined with Ducharme's tubular housing.

Fourth, Petitioner asserts that LED light tubes existed prior to the '895 patent without heat dissipation issues. Reply 4, 10–14. Specifically, Petitioner contends that the Durosite and MacTech LED light tubes predate the '895 patent and “were operable in view of the thermal issues identified” by Patent Owner. *Id.* at 4 (citing Ex. 1001, 2:43–46; Ex. 1049 ¶¶ 24–25; Ex. 2123, 5), 10–14 (citing Ex. 1023, 4; Ex. 1025, 93:12–25; Ex. 1043, 113:18–21; Ex. 1045, 88:19–24; Ex. 1046, 56:2–7, 60:15–19; Ex. 1047, 64:19–65:9; Ex. 2016, 1; Ex. 2041 ¶ 12; Ex. 2066 ¶ 8). Petitioner also contends that Patent Owner's declarant, Mr. Kevin Baxter, “testified that before the time of the invention, [Litepanels] ‘had the technical capability to build . . . two-color models, e.g., single tubes containing both 5600K cool white and 3200K warm white LEDs.’”⁹ *Id.* at 12 (citing Ex. 1042, 86:6–7; Ex. 2047 ¶ 25).

Petitioner's fourth argument is unavailing. Petitioner's asserted challenge to unpatentability does not rely on the Durosite or MacTech LED light tubes or Litepanel's technical capability. Rather, Petitioner asserts that Hasnain's LED light emits at least 1000 lumens using Hasnain's particular heat-dissipating structure. Pet. 62–63. And, as discussed above, Petitioner

⁹ Petitioner also contends that Mr. Baxter “testified that he is unaware of any thermal issues for bi-color LED lights tubes.” Reply 10–11 (citing Ex. 1042, 99:12–14). But the cited testimony does not discuss any LED light tubes that existed prior to the '582 patent. *See* Ex. 1042, 98:9–99:14.

does not explain how Hasnain’s heat-dissipating structure would work when combined with Ducharme’s tubular housing.

Furthermore, the evidence of record does not show that the alleged prior art LED light tubes emit light of at least 1000 lumens, a color deviation less than 5M, 5G, and a CRI greater than 90. For example, the cited evidence indicates that the Durosite LED light tube emits at least 1000 lumens, but does not indicate that it has a color deviation less than 5M, 5G or a CRI greater than 90. *See* Ex. 1001, 2:43–50; Ex. 1049 ¶¶ 24–25; Ex. 2123, 5. The cited evidence states that the MacTech LED tube has “almost zero percent green at 93 CRI,” but does not state that it emits at least 1000 lumens. Ex. 1023, 4; *see* Ex. 1025, 93:12–25; Ex. 1043, 113:18–24 (“MacTech ran at nine to ten watts”); Ex. 1045, 87:23–88:24; Ex. 1046, 56:2–7, 60:15–19; Ex. 1047, 64:12–65:9; Ex. 2041 ¶ 12; Ex. 2066 ¶ 8.

Lastly, the cited evidence does not indicate that Litepanels’s potential LED light tube would have emitted light of at least 1000 lumens, a color deviation less than 5M, 5G, and a CRI greater than 90. *See* Ex. 1042, 86:6–7; Ex. 2047 ¶ 25. In fact, Mr. Baxter explains that Litepanels did not develop an LED tube light because “[p]roper thermal management becomes far *more* challenging if the LEDs are packed into narrow tubes,” and excessive heat “destroys the LEDs’ high color rendering index (‘CRI’) [and brightness].”¹⁰ Ex. 2047 ¶¶ 27, 31–32 (emphasis and alteration in original).

Fifth, Petitioner asserts that claim 1 “merely claim[s] optimum or workable color or temperature ranges of known LED devices and is thus not patentable.” Pet. 61 (citing *In re Aller*, 220 F.2d 454 (CCPA 1955)); *see id.*

¹⁰ Litepanels and others developed LED light panels instead of LED light tubes. PO Resp. 48–50; Ex. 2047 ¶ 77; Ex. 2100 ¶¶ 126–128, 140.

at 49; Reply 15. Petitioner’s argument is unavailing. Petitioner does not show sufficiently that claim 1 recites ranges that “overlap the ranges disclosed in the prior art.” *E.I. DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1006 (Fed. Cir. 2018); *see In re Applied Materials*, 692 F.3d 1289, 1295 (Fed. Cir. 2012) (“the prior art discloses dimensional values overlapping the ranges claimed”). As discussed above, the evidence of record does not show that any alleged prior art LED light tubes emit light within a range that includes at least 1000 lumens, a color deviation less than 5M, 5G, and a CRI greater than 90.

Sixth, Petitioner asserts that claim 1 involves “simply a matter of selecting the correct LEDs.” Reply 15 (citing Ex. 1001, 11:39–45; Ex. 1047, 238:24–242:9; Ex. 1049 ¶¶ 28–31), 17 (citing Ex. 1039, 90:19–22; Ex. 1047, 321:7–16). Petitioner’s argument is unavailing. As discussed above, Petitioner’s assertion that Hasnain’s LED light emits at least 1000 lumens relies on Hasnain’s teaching that “if the LEDs are spaced apart along the length of heat-dissipating structure 36, between 0.5 and 1 watt of heat per square inch of surface area can be dissipated without raising the temperature of the LEDs by more than 30° C above ambient.” Ex. 1008, 4:37–40; *see* Pet. 62–63. Thus, Hasnain indicates that emitting at least 1000 lumens involves using a specific heat-dissipating structure, not merely selecting certain LEDs.

Seventh, Petitioner asserts that a POSITA would have known to “use [Ducharme’s] aluminum housing to address thermal issues.” Reply 16–17 (citing Pet. 65; Ex. 1005, 11:54–12:2; Ex. 1039, 89:10–21, 90:19–22). Petitioner’s argument is unavailing. The cited portion of Ducharme refers to Figure 4 and teaches that certain portions of a housing “are preferably made

from a material that conducts heat, such as aluminum.” Ex. 1005, 11:54–55, 11:67–12:2. But Ducharme’s Figure 4 refers to a different embodiment than the embodiment Petitioner relies on as teaching the housing and cover recited in claim 1. Pet. 51–53, 57–58, 65; Ex. 1005, 11:54–55, 12:49–51, 29:16–19, Figs. 4, 5a, 5b, 29. And Petitioner does not explain specifically why or how a person of ordinary skill in the art would have combined those different embodiments. Moreover, Petitioner does not identify specific evidence indicating that Ducharme’s aluminum housing could have been used instead of Hasnain’s heat-dissipating structure to achieve Hasnain’s lumen output and also maintain a color deviation less than 5M, 5G and a CRI greater than 90.¹¹

Thus, based on the entire record developed at trial, and for the foregoing reasons, Petitioner has not shown that claim 1 would have been obvious over Ducharme, Ianiro, Katzir, and Hasnain.

2. Claims 2, 3, 6–18, 21–24, and 27–29

Each of independent claims 16 and 23 recites limitations similar to limitations 1.a., 1.e., and 1.j. Ex.1001, 13:55–57, 14:10–13, 14:17–27, 14:59–61, 15:14–17, 16:1–11. Petitioner’s arguments and evidence for claims 16 and 23 do not compensate for the deficiencies discussed above for claim 1. *See* Pet. 69–75. Thus, for the same reasons discussed above for

¹¹ The cited testimony of Patent Owner’s declarant, Dr. Gary Allen, only discusses the ’895 patent’s written description, not Ducharme’s teachings. Ex. 1039, 88:18–90:23. Furthermore, Dr. Allen does not state that the ’895 patent’s aluminum housing alone provides sufficient heat dissipation. *Id.* at 90:8–9 (“[T]he claims indicate to us that part of that solution was an aluminum housing.”).

claim 1, Petitioner does not show sufficiently that claims 16 and 23 would have been obvious over Ducharme, Ianiro, Katzir, and Hasnain.

Each of claims 2, 3, 6–15, 17, 18, 21, 22, 24, and 27–29 depends, directly or indirectly, from claim 1, 16, or 23. Petitioner’s arguments and evidence for these claims do not compensate for the deficiencies discussed above for claims 1, 18, and 23. *See* Pet. 64–69, 71, 75. Thus, for the same reasons discussed above for claims 1, 16, and 23, Petitioner does not show sufficiently that claims 2, 3, 6–15, 17, 18, 21, 22, 24, and 27–29 would have been obvious over Ducharme, Ianiro, Katzir, and Hasnain.

3. Summary

In sum, Petitioner has not shown by a preponderance of the evidence that claims 1–3, 6–18, 21–24, and 27–29 would have been obvious over the combination of Ducharme, Ianiro, Katzir, and Hasnain.

III. CONCLUSION

After reviewing the entire record and weighing evidence offered by both parties, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–3, 6–18, 21–24, and 27–29 of the ’895 patent are unpatentable.¹²

¹² The parties dispute whether there are objective indicia to support a conclusion of nonobviousness. PO Resp. 42–59; Reply 18–25; Sur-reply 27–35. We do not address this issue because we determine Petitioner has not met its burden in showing that the combination of the asserted prior art teaches all the limitations of the independent claims, or there is a reason to combine the cited teachings of the asserted prior art.

In summary:

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 6–18, 21–24, 27–29	103	Kit, Ianiro, Ducharme, Katzir		1–3, 6–18, 21–24, 27–29
1–3, 6–18, 21–24, 27–29	103	Ducharme, Ianiro, Katzir, Hasnain		1–3, 6–18, 21–24, 27–29
Overall Outcome				1–3, 6–18, 21–24, 27–29

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not proven, by a preponderance of the evidence, that claims 1–3, 6–18, 21–24, and 27–29 of the '895 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.

IPR2023-00614
Patent 10,566,895 B1

FOR PETITIONER:

David M. Magee
Trenton Ward
Heath J. Briggs
GREENBERG TRAURIG, LLP
david.magee@gtlaw.com
trenton.ward@gtlaw.com
briggsh@gtlaw.com

FOR PATENT OWNER:

David L. Hoffman
NOLAN HEIMANN LLP
dhoffman@nolanheimann.com

Robert Katz
KATZ PLLC
rkatz@katzfirm.com