

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.

IPR2023-00611
Patent 10,197,224 B1

Before CHRISTOPHER L. CRUMBLEY, ZHENYU YANG, and
ROBERT J. WEINSCHENK, *Administrative Patent Judges*.

CRUMBLEY, *Administrative Patent Judge*.

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

I. INTRODUCTION

Quasar Science LLC (“Quasar”) filed a Petition requesting *inter partes* review of claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of U.S. Patent No. 10,197,224 B1 (Ex. 1001, “the ’224 patent”). Paper 2 (“Pet.”). Colt International Clothing, Inc. d/b/a Colt LED (“Colt”) filed a Preliminary Response identifying itself as the owner of the ’224 patent. Paper 8 (“Prelim. Resp.”), 1.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b); 37 C.F.R. § 42.4(a) (2022). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

The following findings of fact and conclusions of law are not final, but are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Any final decision shall be based on the full trial record, including any response timely filed by Colt. Any arguments not raised by Colt in a timely-filed response may be deemed waived.

After considering the Petition and the evidence of record, we determine that Quasar has demonstrated a reasonable likelihood that it would prevail with respect to at least one challenged claim. Colt has not persuaded us that we should exercise our discretion to deny institution of trial. Accordingly, we institute an *inter partes* review of all challenged claims on all asserted grounds. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018); 37 C.F.R. § 42.108(a).

A. Related Matters and Real Parties-in-Interest

The parties indicate that the '224 patent is the subject of a patent infringement lawsuit styled *Colt International Clothing, Inc. d/b/a Colt LED v. Quasar Science LLC, et al.*, Case No. 22-cv-213-CFC (D. Del.). Pet. 5; Paper 3, 2.

Quasar identifies itself, Videndum Production Solutions, Inc., Videndum US Holdings Inc., Videndum Holdings, Ltd, Videndum Investments Limited, Videndum Group Holdings, Ltd, and Videndum plc as real parties-in-interest. Pet. 4. Colt identifies itself as the sole real party-in-interest. Paper 3, 2.

B. The '224 Patent

The '224 patent, entitled “Multicolored Tube Light With Improved LED Array,” issued February 5, 2019 and claims priority to provisional applications filed as early as May 17, 2012. Ex. 1001, codes (45), (54), (60). The '224 patent relates to “a lighting system comprising a tube light with an improved LED array capable of producing light within at least two desired predetermined color temperature ranges, and preferably all colors in a color wheel.” *Id.* at 1:23–27. According to the '224 patent, the lighting industry for stage and set lighting has traditionally used light with color temperature in two ranges: tungsten/warm white (3050–3300 K) and daylight/cool white (5400–5600 K). *Id.* at 2:7–11. The '224 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 2:17–20. 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 or colored lamps.” *Id.* at 2:31–35.

According to the ’224 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 5:10–15. To achieve this, the ’224 patent describes a light system that includes at least two types of LEDs interspersed in a matrix arrangement, the first “configured to produce light in a first predetermined color temperature range, and a second type of LED . . . configured to produce light in a second predetermined color temperature range.” *Id.* at 5:56–61. Alternatively, “the two colors may be provided along with other colors to produce a multiplicity of colors. In this situation, it is most preferred to use four (or more) LEDs . . . in the array.” *Id.* at 6:33–38.

C. The Challenged Claims

Petitioner challenges the patentability of claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of the ’224 patent, of which claims 1, 13, 23, and 35 are independent. Claim 1 is illustrative of the subject matter of the challenged claims:

1. An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices is configured to emit five different colors of light and

comprises: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

a controller coupled to the array of LED emitting devices and configured to receive commands for operating select ones of the LED emitting devices with varying amounts of power to produce light consisting of varying amounts of the five different colors provided by the first, second, third, fourth, and fifth sets of LED emitting elements to produce many different colors outputted from the lighting device, and further comprising an LED driver, the LED driver configured to selectively provide electrical power to the array of LED emitting devices;

wherein the housing has a linear form factor substantially that of a fluorescent tube having an axial direction and having a diameter of no greater than about 41 mm, and further comprising an electrical input connection for receiving input power, wherein the input connection is in electrical communication with the LED driver, and

wherein the housing has opposite ends and the support structure is in a form of an elongated and narrow surface extending in the axial direction and the housing having a top side and a bottom side which each extend in the axial direction, and wherein the LEDs are configured to emit light from the top side of the housing along a length of the housing between the opposite ends, and the top side of the housing has a diffusion cover extending the axial length of the support between the ends.

Ex. 1001, 27:51–28:29.

D. The Asserted Grounds of Unpatentability

Petitioner contends that claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of the '224 patent are unpatentable under 35 U.S.C. § 103¹ based on the following grounds (Pet. 7):

Claims Challenged	References
1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, 41–45	Kit, ² Ducharme, ³ Katzir ⁴
1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, 41–45	Mueller, ⁵ Ansems, ⁶ Simon ⁷

Quasar contends that all references cited in the grounds of unpatentability qualify as prior art under pre-AIA 35 U.S.C. § 102(b). Pet.

¹ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The '224 patent claims priority to a provisional application filed on May 17, 2012. See Ex. 1001, code (60). Quasar concedes that “[f]or purposes of this proceeding, the earliest effective filing date is May 17, 2012.” Pet. 7. Accordingly, in this Decision we apply pre-AIA statutes.

² US Patent No. 7,507,001 B1 to Kit, filed May 21, 2007, issued March 24, 2009. Ex. 1004.

³ US Patent No. 7,350,936 B1 to Ducharme et al., filed August 28, 2006, issued April 1, 2008. Ex. 1005.

⁴ US Patent Pub. No. 2010/0102729 A1 to Katzir et al., filed October 8, 2009, published April 29, 2010. Ex. 1010.

⁵ US Patent Pub. No. 2005/0047134 A1 to Mueller et al., filed September 30, 2004, issued March 3, 2005. Ex. 1006.

⁶ US Patent No. 8,026,532 B1 to Ansems et al., filed November 28, 2005, issued September 27, 2011. Ex. 1007.

⁷ US Patent Pub. No. 2010/0102960 A1 to Simon et al., filed October 24, 2008, published April 29, 2010. Ex. 1008. Quasar refers to this reference as “Ivey,” using the surname of the second-named inventor. We follow our typical practice of referring to a reference by its first-named inventor or author.

10–15. Colt does not, at this stage of the proceeding, challenge the availability of any of the references as prior art. We presume, for purposes of this decision, that all references relied on by Quasar are prior art to the '224 patent.

In addition to the references listed above, Petitioner relies on the testimony of Fred Holmes. Ex. 1003.

II. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103 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 ordinary skill in the art; and (4) when in evidence, objective evidence of obviousness or nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In order to determine whether an invention would have been obvious at the time the application was filed, we consider the level of ordinary skill in the pertinent art at critical time. *Graham*, 383 U.S. at 17. The resolution of this question is important because it allows us to “maintain[] objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). In assessing 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) (quotation omitted). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovation Toys, LLC v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

B. Level of Skill

Quasar asserts that a person of ordinary skill in the art at the time of the invention 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 LED lights.” Pet. 16 (citing Ex. 1003 ¶¶ 32–33). Colt does not dispute Quasar’s characterization of the level of skill, arguing that “the proposed level of ordinary skill does not affect the ultimate analysis.” Prelim. Resp. 15. At this stage of the proceeding, we adopt Quasar’s definition of the level of skill in the art, which is consistent with the disclosure of the ’224 patent and asserted prior art of record. If the parties disagree with our preliminary finding, they are invited to further brief the issue of level of ordinary skill in the art and, in particular, which disputed issues material to patentability turn on the definition adopted by the Board.

C. Claim Construction

In *inter partes* review proceedings, we construe claims using the same claim construction standard that would be used in a civil action under

35 U.S.C. § 282(b), as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. *See* 37 C.F.R. § 42.100(b) (2022). Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13.

Both parties agree that the terms of the claims of the ’224 patent should be given their ordinary and customary meaning, but neither party further elaborates on what those meanings are for any particular claim term. Pet. 16–17; Prelim. Resp. 15. We interpret the parties’ positions to be that no claim term of the ’224 patent requires express construction for purposes of deciding whether to institute trial. Upon review of the record and the parties’ arguments, we agree. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“we need only construe 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. Discretionary Denial under 35 U.S.C. § 325(d)

Institution of an *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a) (authorizing institution of an *inter partes* review under particular circumstances, but not requiring institution under any circumstances); *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 273 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question

whether to institute review” (emphasis omitted)); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”).

Our discretion to deny institution of trial is expanded on further in 35 U.S.C. § 325(d), which states that, in determining whether to institute *inter partes* review, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” In evaluating arguments under § 325(d), we apply a two-part framework, asking:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2)
- if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

In applying the two-part *Advanced Bionics* framework, we consider several non-exclusive factors, including:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art or patent owner distinguishes the prior art;
- (e) whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and

(f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph).

Becton, Dickinson factors (a), (b), and (d) relate to whether the art or arguments presented in the petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. Factors (c), (e), and (f) “relate to whether the petitioner has demonstrated a material error by the Office” in its prior consideration of that art or arguments. *Id.* Only if the same or substantially the same art or arguments were previously presented to the Office do we then consider whether the petitioner has demonstrated a material error by the Office. *Id.* “At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Id.* at 9.

Colt argues that we should exercise our discretion under 35 U.S.C. § 325(d) and not institute trial, because the art and arguments in the Petition are allegedly the same or substantially the same as those previously presented to the Office. Prelim. Resp. 15–26. Quasar argues that discretionary denial is inappropriate, because the Examiner did not consider the prior art combination relied on in the Petition. Pet. 79. For the reasons set forth below, we do not exercise our discretion to deny institution under § 325(d).

1. The Same or Substantially the Same Art or Arguments

Colt observes that two of the references relied on in the Petition, Kit and Katzir, were previously presented to the Office as part of an Information Disclosure Statement (IDS) during the prosecution of the application that issued as the '224 patent. Prelim. Resp. 16. The remaining references in the Petition, Colt contends, are substantially similar to those previously presented to the Office: Ducharme is alleged to be substantially similar to Ducharme '261⁸ (*id.* at 17); Mueller is alleged to be substantially similar to Mueller '029⁹ (*id.* at 18); Simon is said to be substantially similar to Simon '730¹⁰ (*id.* at 18–19); and Colt alleges that the portions of Ansems relied on in the Petition are substantially the same as Kit's teachings (*id.* at 20–21).

From the foregoing, it is clear that the prior art presented in the Petition is not “the same prior art” as that previously presented, given the inclusion of references in the Petition that were not previously before the Office. Nevertheless, § 325(d) also applies if the prior art is in material respects substantially similar to what was previously presented. To that end, Colt provides us with summary charts showing the allegedly similar teachings in each of Ducharme '261, Mueller '029, and Simon '730, as compared to the disclosures Quasar relies on from Ducharme, Mueller, and Simon, respectively. Prelim. Resp. 19–20, Appx. A–B. Colt summarizes in

⁸ US Patent Pub. No. 2004/0105261 A1 to Ducharme et al., filed Nov. 11, 2003, published June 3, 2004 (Ex. 2004).

⁹ US Patent No. 7,646,029 B1 to Mueller et al., issued Jan. 12, 2010 (Ex. 2005).

¹⁰ US Patent Pub. No. 2010/0102730 A1 to Simon et al., filed Oct. 2, 2009, published Apr. 29, 2010 (Ex. 2006).

narrative form the alleged similarities between Ansems and Kit. *Id.* at 20–21. We have evaluated this evidence as presented by Colt, which was not rebutted or otherwise addressed by Quasar in the Petition.¹¹ Ultimately, however, we need not decide whether the prior art in the Petition is substantially the same as this previously presented art, as even if we were to conclude that part 1 of the *Advanced Bionics* framework is satisfied here, we would find material error under part 2 of the framework, as discussed below.

2. *Material Error*

The second part of the *Advanced Bionics* framework examines whether the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics*, Paper 6 at 8. Central to this analysis is factor (c) of *Becton, Dickinson*, which “focuses on the record developed by the Office in previously reviewing the art or arguments.” *Id.* at 10. In cases where the Office raised a specific teaching of a reference during prosecution, and the petitioner disagrees with that specific finding of record, “then ordinarily the petitioner’s required showing of material error must overcome persuasively that specific finding of record.” *Id.*

On the other hand, we are often presented with circumstances such as those found in the present case, where the prior art that was previously presented to the Office was not substantively remarked upon or applied in a rejection of the claims. This often occurs in the context of art submitted on an IDS, which is the manner in which the majority of the references identified by Colt in this case were incorporated into the file history. Ex. 1002, 216 (Kit, Ducharme ’261, Mueller ’029), 217 (Katzir). Only Simon

¹¹ Quasar did not request a pre-institution reply under 37 C.F.R. § 42.108(c).

'730 was cited by the Examiner rather than being submitted on an IDS, but the reference only appears on a Notice of References Cited (Ex. 1002, 295) and does not appear to have been substantively discussed by the Examiner. Indeed, Colt does not allege, nor have we found any record of, any specific discussion or application of the previously presented references by the Examiner during prosecution.

In such situations, our analysis under factor (c) of *Becton, Dickinson* takes the absence of any substantive application of the references into account. “[I]f the record of the Office’s previous consideration of the art is not well developed or silent, then a petitioner may show the Office erred by overlooking something persuasive.” *Advanced Bionics*, Paper 6 at 10. Essentially, *Advanced Bionics* recognizes that the showing of material error necessary to satisfy the second step of the framework varies, depending on the degree to which the previously-presented art was substantively addressed by the Office. Where, as here, the Office has not substantively addressed prior art other than an Examiner initialing an IDS or listing a reference on a Notice of References Cited, the petitioner may show material error by showing that the Office failed to reject the claims over the asserted art. In other words, a petitioner’s showing that the challenged claims are unpatentable over the asserted prior art may itself be evidence of material error by the Office during prosecution. *See Apple, Inc. v. Telefonaktiebolaget LM Ericsson*, IPR2022-00457, Paper 7 at 8 (PTAB Sept. 21, 2022); *CODE200, UAB et al. v. Bright Data Ltd.*, IPR2022-00353, Paper 8 at 10 (PTAB July 1, 2022).

Here, Quasar contends that the Office erred in a manner material to the patentability of the challenged claims by failing to “consider any of the

prior art combinations relied on” in the Petition, and by failing to “consider any of the invalidity positions presented.” Pet. 79. After reviewing the preliminary record, we agree that there is sufficient evidence of material error to avoid discretionary denial in this case. Specifically, as discussed below, we find that Quasar has set forth a reasonable likelihood that the challenged claims are unpatentable over Mueller, Ansems, and Simon, which also leads us to conclude that the Office’s prior failure to apply these references against the pending claims was an error that was material to the patentability of these claims. Furthermore, as discussed below, the evidence cited in the Petition demonstrates that the Office overlooked the prior art’s teachings of the limitations that were the basis for allowing the challenged claims. *See* Ex. 1002, 291–92. As such, we find that the second part of the *Advanced Bionics* framework is not met, and we decline to exercise our discretion to deny institution of trial under § 325(d).

E. Obviousness Based on Kit, Ducharme, and Katzir

Quasar contends that claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of the ’224 patent are unpatentable, as they would have been obvious over the combined disclosures of Kit, Ducharme, and Katzir. Pet. 17–51. Colt opposes, arguing that the combined references do not teach or suggest all limitations of the independent claims (Prelim. Resp. 27–30), that Quasar has failed to present a reason for combining Kit with Ducharme (*id.* at 30–32), and that the result of combining the references as Quasar proposes would not result in the claimed invention (*id.* at 32–33). Because it is dispositive of this ground of unpatentability, we focus on the first argument, namely Colt’s contention that the combined references do not teach the following element of claim 1:

an array of LED emitting devices . . . configured to emit five different colors of light . . . compris[ing]: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range.

Prelim. Resp. 27; Ex. 1001, 27:56–67. We will refer to this limitation as the “five LED element.”

Quasar contends that Kit teaches the five LED element, because it discloses an LED array “configured to emit at least five different colors (including white), with five sets of LEDs.” Pet. 28. As support, Quasar characterizes Kit as disclosing “that there are many types of LED lights, all of which may be used in the LED array,” and that “the fifth set of LEDs can emit broad-spectrum white light.” *Id.* at 28 (citing Ex. 1004, 20:50–63, 3:20–38; Ex. 1003 ¶ 131). Notably, Quasar does not propose any modification of Kit’s LED array or suggest that a person of ordinary skill in the art would have used Kit’s array in any manner other than what is disclosed in the reference. *See id.* at 18 (person of ordinary skill “would have been motivated to use the LED lighting device disclosed in Kit as a suitable lighting device for use with commercial image recording”), 28 (citing only to Kit for the five LED element).

Colt argues that Kit does not teach the use of five different color LEDs in a tubular lighting device. Prelim. Resp. 28. According to Colt, Quasar’s characterization Kit’s disclosure is incorrect because no embodiment of Kit uses five different LED colors in which one is a broad-

spectrum white. *Id.* Colt directs us to Kit’s disclosure of an embodiment using red, green, and blue LEDs, but argues that Kit does not disclose using white LEDs with these lights, noting that the reference states that this embodiment is described as “*another* circuit module [that] can be a color effects module for use with color LEDs *instead of white LEDs.*” *Id.* (citing Ex. 1004, 24:27–29) (emphasis added). Colt argues that Kit is here disclosing a separate embodiment of its lighting array that uses multiple color LEDs to create color effects, instead of an alternate embodiment that uses white LEDs. *Id.* at 28–29.

Colt also notes that other portions of Kit cited by Quasar do not support the propositions in the Petition. For example, Colt directs us to the Petition’s citation of Kit as teaching “a fifth set of LEDs” that are broad-spectrum white LEDs (Pet. 28) but highlights that the portion of Kit relied on as support is merely a “laundry list” of LED colors (Ex. 1004, 22:9–35 (“LEDs are now available in colors like Red, Blue, Green, Yellow, Amber, Orange and many other colors including White.”)). Prelim. Resp. 29. Colt argues that this disclosure provides no guidance to a person of ordinary skill that might lead them to create an array with five different colors of LEDs, wherein one is broad-spectrum white. *Id.*

Upon review of the preliminary record, including the parties’ arguments and the disclosure of Kit, we agree that Quasar’s evidence on this ground of unpatentability falls short. As noted above, Quasar does not propose a modification of Kit, or contend that a person of ordinary skill in the art would have selected five different colors from the “laundry list” of LEDs mentioned in Kit, with one of those colors being broad-spectrum white. Even if Quasar had proposed such a combination, the Petition is

devoid of any reason why a person of ordinary skill in the art would have made this modification, including why the artisan would have decided to pick five different color LEDs to include in the array, or why one of those colors would have been broad-spectrum white.

Looking only at the LED arrays specifically described in Kit, as is the basis of Quasar’s contention as to the five LED element, we discern insufficient basis to conclude that Kit’s array includes five different color LEDs with one being white. As Colt persuasively argues, the embodiments of Kit appear on this record to be either white LEDs, potentially with a combination of yellow or amber LEDs (Ex. 1004, 21:20–22:28), or a “color effects module” that uses color LEDs “instead of white LEDs” and uses red, green, and blue and optionally amber. *Id.* at 24:27–36. Neither of these embodiments contain five different color LEDs in which one color is broad spectrum white.

For these reasons, we find Quasar’s contentions on this ground of unpatentability lacking as to claims 1 and 23, the two independent claims that contain the five LED element, as well as claims 3, 4, 7–12, 25, 26, and 28–34 which depend from these claims. Similar reasoning applies to independent claims 13 and 35, which recite an array having four different color LEDs, one of which is a broad-spectrum white. *See* Ex. 1001, 29:10–20. None of the embodiments of Kit that Quasar cites in its Petition have four different color LEDs, as recited in these independent claims. *See* Pet. 41–42 (analyzing the four-LED element of claim 13 in the same way as the five-LED element of claim 1). And as a result, we find Quasar’s evidence and analysis lacking as to claims 13 and 35, as well as dependent claims 36–39 and 41–45.

Nevertheless, because we find below that the Petition sufficiently sets forth how at least one claim is unpatentable under the second prior art combination, we will proceed to trial on the Kit, Ducharme, and Katzir ground as well. *See* 37 C.F.R. § 42.108(a). While the parties are permitted to address this ground during the instituted trial, we caution Quasar that any arguments must be responsive to this Decision or the Patent Owner Response and cannot impermissibly expand the grounds set forth in the Petition. *See* 37 C.F.R. § 42.23(b); *see also Rembrandt Diagnostics, LP v. Alere, Inc.*, 76 F.4th 1376, 1383–84 (Fed. Cir. 2023); *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1383 (Fed. Cir. 2023).

F. Obviousness Based on Mueller, Ansems, and Simon

Quasar contends that claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of the '224 patent are unpatentable, as they would have been obvious over the combined disclosures of Mueller, Ansems, and Simon. Pet. 52–79. Colt opposes, arguing that the combined references do not teach or suggest all limitations of the independent claims (Prelim. Resp. 37–41), and also argues that there is no likelihood of success as to dependent claims 3–4 and 10–11 (*id.* at 41–45) as well as the remaining challenged claims (*id.* at 46–47).

1. The Proposed Combination

Mueller discloses “methods and systems for providing controlled lighting, including . . . both white and non-white colored lighting, including color temperature controlled lighting.” Ex. 1006, code (57). The systems may include “a plurality of LEDs selected from the group consisting of red, green, blue, amber, white, orange and UV LEDs.” *Id.* ¶46. The lighting systems may be “implemented in any one of several different structural

configurations,” including being configured as a “replacement or ‘retrofit’ to engage . . . in a conventional socket or fixture arrangement.” *Id.* ¶ 185.

Mueller specifically mentions lighting in a motion picture environment, and using a processor to control the camera and a lighting system with a plurality of LEDs selected from various colors. *Id.* ¶ 49. “For example, red, green and blue can be mixed with amber, white, UV, orange, IR or other colors of LED.” *Id.* ¶ 194. Mueller notes that while “mixtures of red, green and blue have been proposed,” their use in film lighting is “not ideal” because of the narrow bandwidth of the red, green, and blue emitters. *Id.* ¶ 195. The addition of white LEDs to a red, green, and blue mixture is said to give a “better” white by adding a “broader-band source to the mixture,” and the further addition of an amber source can improve the color gamut even more. *Id.* ¶¶ 196–97.

Ansems discloses a color variable light-emitting device that includes an array of multi-color LEDs arranged on a single substrate. Ex. 1007, code (57). The array comprises at least three colors of LEDs to emit three colors of light, but “may also comprise further sets, such as a fourth and a fifth set” of LEDs to emit further colors. *Id.* at 1:49–56. Ansems teaches that such an array can provide light of any color inside the color space defined by the colors of the red, blue, and green LEDs, and that by “controlling the current through the different colored sets individually, the total color of the array is variable.” *Id.* at 4:17–21. Ansems describes the control circuitry that may be used to control the LEDs in such a manner. *Id.* at 4:22–49.

Simon discloses an emergency lighting system for a building that includes at least one LED-based light. Ex. 1008, code (57). The LED light of Simon fits into a traditional fluorescent tube light fixture, such as a fixture

designed to accept T5, T8, T10, or T12 tubes, and may have the shape of a standard tube light. *Id.* ¶ 15; Fig. 6.

According to Quasar, a person of ordinary skill in the art would have had reason to use the lighting devices of Mueller in image capturing applications such as film lighting, and would have sought to replace the existing fluorescent lights used in such applications with LEDs because they were “cheaper, more reliable, and more versatile.” Pet. 52–53 (citing Ex. 1003 ¶¶ 373–374). Quasar contends that the skilled artisan would have looked to Simon for LED lighting that uses “a fluorescent, linear form factor with the types of LEDs disclosed in Mueller.” *Id.* at 53. The skilled artisan would have also had reason to look to Ansems, Quasar argues, to use its systems for controlling “an RGBW LED array that is arranged in a matrix” in a substantially repeating pattern. *Id.* (citing Ex. 1003 ¶¶ 368–376). The resulting combination allegedly would have resulted in a lighting system having all elements of the challenged claims.

For most elements of the challenged claims, the parties do not dispute that the combined disclosures of Mueller, Ansems, and Simon would have disclosed what is required by the claims. Quasar sets forth, for example, how Mueller discloses a support structure and housing for the LED array (Pet. 55–57), and Mueller and Ansems both disclose a controller for independently controlling the LEDs to produce light having various amounts of the individual colors (*id.* at 58–59). We do not focus herein on these undisputed elements, because upon review of Quasar’s evidence and arguments we find that they are sufficiently supported in the record. We also find that Quasar sufficient sets forth a reason why a person of ordinary skill in the art would have sought to combine the disclosures of Mueller,

Ansems, and Simon in the manner proposed. We turn, therefore, to the elements of the ground disputed by the parties.

2. *The Five (or Four) LED Element*

Colt disputes that the prior art, even if combined in the manner Quasar suggests, would have resulted in a LED array that has five different colors of LED lights, one of which is a broad-spectrum white light. Prelim. Resp. 39–40. Quasar contends that this limitation is supplied by Mueller, which states that its LED device may include a

wide variety of colors of LED, in various mixtures, including red, green, and blue LEDs to produce a color mix, as well as one or more other LEDs to create varying colors and color temperatures of white light. For example, red, green and blue can be mixed with amber, white, UV, orange, IR or other colors of LED.

Pet. 57–58 (citing Ex. 1006 ¶¶ 46, 194).

According to Colt, Mueller does not teach five different color LEDs where one color is a broad-spectrum white light. Prelim. Resp. 39. Colt argues that Mueller simply provides a “laundry list of LED colors” that does not teach the combination of those possible colors. *Id.* Colt also disputes that the white LED disclosed by Mueller is a broad-spectrum white LED. *Id.*

Upon review of the preliminary record, we are persuaded that there is sufficient support in Mueller for Quasar’s contentions. Rather than simply providing a “laundry list” of colors that may be combined, Mueller specifically discloses that RGB color arrays may be improved by including white and amber LEDs. Ex. 1006 ¶¶ 196–97. Mueller also refers to the white LEDs as adding a “broader-band source to the mixture” (*id.* ¶ 197), so

it is reasonable to conclude on this record that Mueller suggests using a broad-spectrum white LED.

3. *The Driver and Form Factor Elements*

The independent claims also require an LED driver that is configured to selectively provide electrical power to the array of LEDs, and that the housing of the lighting device has a linear form factor “substantially that of a fluorescent tube” with a diameter no greater than about 41 mm.¹² Ex. 1001, 28:8–18. Quasar relies on Mueller as disclosing a driver that powers its LED devices, as well as Ansems which allegedly describes how to control power to the LEDs. Pet. 60 (citing Ex. 1006 ¶ 64; Ex. 1007, 4:8–24; Ex. 1003 ¶¶ 399–401). Similarly, Quasar relies on Mueller as teaching that its device may resemble fluorescent lamps such as T12 and T8 fluorescent tube lighting, as well as Simon that discloses a tubular structure in which its LEDs are mounted, for compatibility with existing light fixtures. Pet. 60–61 (citing Ex. 1006 ¶¶ 64, 295; Ex. 1008 ¶¶ 6, 16–18; Ex. 1003 ¶¶ 402–405). Quasar’s declarant, Mr. Holmes, testifies that it is “well-known in the art” that a standard T12 fluorescent light is tubular, linear, and has a diameter of about 41 mm or less. Ex. 1003 ¶ 405.

Colt contends that “Mueller lacks any details of how a lighting unit is constructed,” and that there is no disclosure that its lighting source “has all components onboard a T12 or T8 tubular format.” Prelim. Resp. 40. Colt also argues that even if one of skill in the art had reason to create a tubular LED device with five different colors of LEDs, having an onboard LED

¹² Independent claims 23 and 35 require the form factor to be “substantially that of one of a T12 and T8 form” instead of reciting a shape and size. Ex. 1001, 30:48–53.

driver “would not have been obvious due to limited space.” *Id.* According to Colt, Ansems “lacks any disclosure about where the LED driver is located.” *Id.* at 41.

Having reviewed the preliminary record and the parties’ arguments, we are persuaded that Quasar’s evidence as to these claim elements is sufficient at this stage of the proceeding. Quasar sufficiently indicates where the prior art discloses a driver and the form factors recited by the claims, and sets forth a rational reason why a person of ordinary skill in the art would have had reason to place the elements of a lighting device in a form factor that would have fit existing light fixtures. We do not discern any disclosure in the record at this stage of the proceeding that indicates that a person of ordinary skill would have been unable to achieve the claimed combination due to size constraints or other technical obstacles.

4. *The Dependent Claims*

Colt also disputes whether the combination proposed by Quasar would disclose various elements of the dependent claims. Prelim. Resp. 41–45. For example, for claims 3 and 4 which recite that the driver of the device is adapted to produce at least 255 different colors from the lighting device, Colt argues that Mueller does not teach “increments of about 1/255” to produce these results to match an entertainment industry color wheel. *Id.* at 41–42. And for claim 10, which requires that the five colors of the LED array are red, green, blue, amber, and white, Colt argues that “Mueller discloses all of these colors and more” in a laundry list but provides no reason to choose among them. *Id.* at 44. Because we have found Quasar’s showing sufficient as to the independent claims of the ’224 patent on at least

one ground, we need not evaluate each of these arguments in detail, but provide the following discussion as guidance for the parties.

With respect to claims 3 and 4, Quasar contends that Mueller “discloses that the LED driver is adapted to selectively drive the five sets of LEDs in increments of 1/255, which can produce more than 255 different colors.” Pet. 63 (citing Ex. 1003 ¶¶ 419–420). Mr. Holmes testifies that Mueller discloses controlling its LED light with a DMX signal that can “incrementally control the color of RGBAW lights.” Ex. 1003 ¶ 420 (citing Ex. 1006 ¶¶ 158, 183). According to Mr. Holmes, a person of ordinary skill in the art would have understood that a DMX signal allows for the generation of millions of colors, and notes that the ’224 patent states that an 8 bit DMX signal would result in 1/255 increments. *Id.* (citing Ex. 1001, 7:14–26). While we agree with Colt that there is not a direct disclosure in Mueller of the 1/255 increments or the use of an entertainment industry color wheel, on this record we consider Mr. Holmes’ testimony sufficient to establish why a person of ordinary skill in the art, seeking to create a lighting device for use in film applications, would have applied Mueller’s disclosure to create a device having the claimed features.

Regarding Colt’s argument that Mueller only discloses a “laundry list” of colors and does not specifically teach the red, green, blue, amber, and white LEDs required by claim 10, we find this unpersuasive for the same reasons discussed above in connection with claim 1. Mueller specifically discloses that adding amber and “broader-band” white to an array of red, green, and blue LEDs would improve the device by “filling in” the gamut. Ex. 1006 ¶¶ 195–197.

III. CONCLUSION

Upon consideration of the Petition and the evidence presented, we determine that Quasar has demonstrated a reasonable likelihood of success in proving that at least one of the challenged claims of the '224 patent is unpatentable. Colt has not persuaded us to exercise our discretion to deny institution of trial. We, therefore, institute trial on all challenged claims and grounds raised in the Petition.

At this stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or as to the construction of any claim term. Any final determination will be based on the record developed during trial. We place Colt on express notice that any argument not asserted in a timely-filed Response to the Petition, or in another manner permitted during trial, shall be deemed waived.

IV. ORDER

It is hereby

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1, 3, 4, 7–13, 23, 25, 26, 28, 29–39, and 41–45 of U.S. Patent 10,197,224 B1 is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '224 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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Patent 10,197,224 B1

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