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571-272-7822

Paper 8
Entered: August 4, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

LYNK LABS, INC.,
Patent Owner.

PGR2023-00016
Patent 11,297,705 B2

Before ARTHUR M. PESLAK, STEPHEN E. BELISLE, and SCOTT RAEVSKY, *Administrative Patent Judges*.

BELISLE, *Administrative Patent Judge*.

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

Home Depot U.S.A., Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting a post-grant review of claims 1–3, 5, 7–10, 12, 14–17, and 19 of U.S. Patent No. 11,297,705 B2 (Ex. 1001, "the '705 patent"). Lynk Labs, Inc. ("Patent Owner") timely filed a Preliminary Response to the Petition (Paper 6, "Prelim. Resp.").

We have authority to determine whether to institute a post-grant review. 35 U.S.C. § 324(c); 37 C.F.R. § 42.4(a) (2022). We may not institute a post-grant review "unless . . . it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). When instituting post-grant review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim. 37 C.F.R. § 42.208(a).

Applying those standards, and upon consideration of the information presented in the Petition and Preliminary Response, we determine that Petitioner has established that it is more likely than not that at least one claim of the '705 patent is unpatentable. Accordingly, we institute a post-grant review as to all challenged claims of the '705 patent on all grounds raised in the Petition.

We base our factual findings and conclusions at this stage of the proceeding on the evidentiary record developed so far. This is not a final decision as to the construction of any claim term or the patentability of any claim. Any final decision shall be based on the full trial record, including any response timely filed by Patent Owner. Any arguments not raised by

Patent Owner in a timely filed response may be deemed waived, even if they were presented in the Preliminary Response.

II. BACKGROUND

A. Real Parties in Interest

Petitioner, which itself is a real party in interest, also identifies Home Depot Product Authority, LLC as a real party in interest. Pet. 1. Petitioner, "[i]n an abundance of caution," also identifies as potential real parties in interest suppliers of certain products that have been accused in district court of infringing related patents, including King of Fans, Inc., Air Cool Industries, New Bright Technology, Leedarson Lighting, ETI, and Globe Electric. Pet. 1. Petitioner notes that "[t]hese suppliers have not controlled or participated in the drafting of this Petition, and none has consented to being named an RPI." Pet. 1.

Patent Owner identifies itself as the real party in interest. Paper 3, 1.

B. Related Matters

The parties identify PGR2022-00009 as an "administrative proceeding[] that may affect, or be affected by, a decision in this proceeding." Pet. 1; *see* Paper 3, 1. The Board issued a Final Written Decision in PGR2022-00009 on May 22, 2023, finding unpatentable all challenged claims in U.S. Patent No. 10,932,341 B2, the immediate parent to the '705 patent. Ex. 1032.

Petitioner identifies IPR2021-01541 as another "administrative proceeding[] that may affect, or be affected by, a decision in this proceeding." Pet. 1–2. The Board issued a Final Written Decision in IPR2021-01541 on April 26, 2023, finding unpatentable all challenged

claims in U.S. Patent No. 10,537,001 B2, a parent to the '705 patent (and immediate parent to the '341 patent at issue in PGR2022-00009). *Home Depot USA, Inc. v. Lynk Labs, Inc.*, IPR2021-01541, Paper 39 (PTAB Apr. 26, 2023).

Patent Owner identifies IPR2021-01540 as a related matter that "may affect or be affected by a decision in this proceeding." Paper 3, 1. The Board issued a Final Written Decision in IPR2021-01540 on March 29, 2023, finding unpatentable all challenged claims in U.S. Patent No. 10,091,842 B2. *Home Depot USA, Inc. v. Lynk Labs, Inc.*, IPR2021-01540, Paper 46 (PTAB Mar. 29, 2023).

Patent Owner also identifies U.S. Patent Application No. 17/712,658 as a related matter that may affect, or be affected by, a decision in this proceeding. Paper 3, 1. This application is a pending continuation of the application from which the '705 patent issued.

C. The '705 Patent

The '705 patent is titled "Multi-Voltage and Multi-Brightness LED Lighting Devices and Methods of Using Same," and issued on April 5, 2022, from U.S. Patent Application No. 17/181,802, filed February 22, 2021. Ex. 1001, codes (10), (21), (22), (45), (54). The '705 patent claims priority through a series of continuation and continuation-in-part applications to U.S. Provisional Applications Nos. 61/217,215, filed May 28, 2009, and 60/997,771, filed October 6, 2007. *Id.* at codes (60), (63). The '705 patent "generally relates to light emitting diodes ('LEDs') for AC operation . . . [and] to multiple voltage level and multiple brightness level LED devices, packages and lamps." *Id.* at 1:27–30.

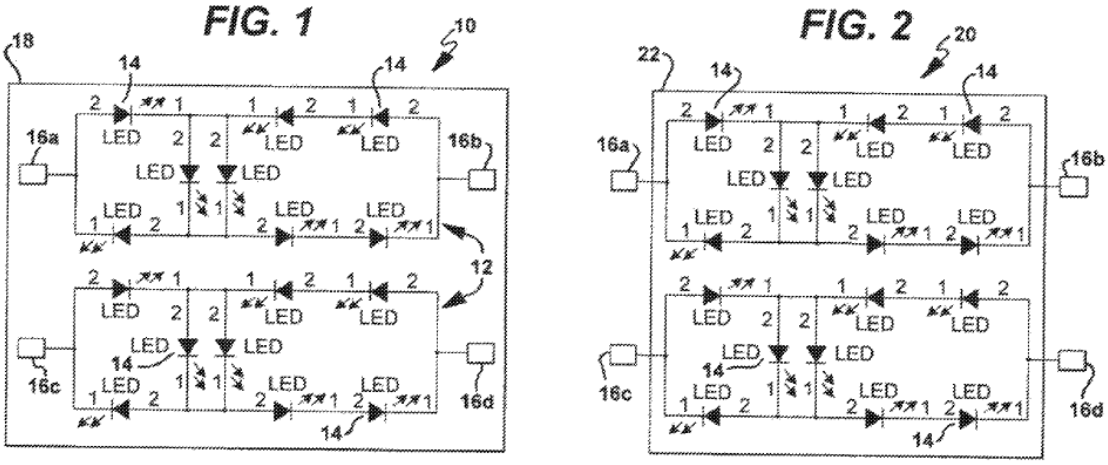
The '705 patent states that existing LED packages do not provide "a multi-voltage and/or multi-current circuit monolithically integrated on a single substrate." Ex. 1001, 3:1–3. The '705 patent provides that it would be advantageous to (i) have a multi-voltage and/or multi-brightness circuit that can "provide options in voltage level, brightness level and/or AC or DC powering input power preference," and (ii) provide multiple voltage level and/or multiple brightness level light emitting LED circuits, chips, packages, and lamps "that can easily be electrically configured for at least two forward voltage drive levels with direct AC voltage coupling, bridge rectified AC voltage coupling or constant voltage DC power source coupling." *Id.* at 3:4–15. To this end, the '705 patent discloses:

> [The] invention comprises circuits and devices that can be driven with more than one AC or DC forward voltage "multi-voltage" at 6V or greater based on a selectable desired operating voltage level that is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration and/or more than one level of brightness "multi-brightness" based on a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit. The desired operating voltage level and/or the desired brightness level electrical connection may be achieved and/or completed at the LED packaging level when the multi-voltage and/or multi-brightness circuits and/or single chips are integrated into the LED package, or the LED package may have external electrical contacts that match the integrated multi-voltage and/or multi-brightness circuits and/or single chips within, thus allowing the drive voltage level and/or the brightness level selectability to be passed on through to the exterior of the LED package and allowing the voltage level or brightness level to be selected at the LED package user, or the PCB assembly facility, or the end product manufacturer. . . .

> According to another aspect of the invention, each multi-voltage AC LED device would be able to be driven with at least two different AC forward voltages resulting in a first forward voltage drive level by electrically connecting the two single voltage AC LED circuits in parallel and a second forward voltage drive level by electrically connecting the at least two single voltage level AC LED circuits in series.

Id. at 3:15–36, 4:16–22.

Figures 1 and 2 of the ’705 patent, illustrating schematic diagrams of multi-voltage and/or multi-brightness LED lighting devices, are reproduced below. Ex. 1001, 9:61–62, 10:17–18.



Figures 1 and 2 illustrate schematic diagrams of multi-voltage and/or multi-brightness LED lighting devices.

Id.

The multi-voltage and/or multi-brightness LED lighting device 10 illustrated in Figure 1 includes at least two AC LED circuits 12 “configured in [an] imbalanced bridge circuit,” each of which have at least two LEDs 14. Ex. 1001, 9:61–10:16. The at least two AC LED circuits have electrical contacts 16*a*, 16*b*, 16*c*, and 16*d* at opposing ends to provide connectivity

options for an AC voltage source input. *Id.* For example, if 16*a* and 16*c* are electrically connected together and 16*b* and 16*d* are electrically connected together and one side of the AC voltage input is applied to 16*a* and 16*c* and the other side of the AC voltage input is applied to 16*b* and 16*d*, the circuit becomes a parallel circuit with a first operating forward voltage. *Id.* If, however, only 16*a* and 16*c* are electrically connected and the AC voltage inputs are applied to electrical contacts 16*b* and 16*d*, a second operating forward voltage is required to drive single chip 18. *Id.* The '705 patent further explains that single chip 18 also may be configured to operate at more than one brightness level ("multi-brightness") by "electrically connecting for example 16*a* and 16*b* and applying one side of the line of an AC voltage source to 16*a* [and] 16*b* and individually applying the other side of the line from the AC voltage source a second voltage to 26*b* and 26*c*."[1] *Id.*

In the multi-voltage and/or multi-brightness LED lighting device 20 illustrated in Figure 2, the at least two AC LED circuits 12 are integrated onto substrate 22. Ex. 1001, 10:17–28. The at least two AC LED circuits 12 are "configured in [an] imbalanced bridge circuit," each of which have at least two LEDs 14. *Id.* The at least two AC LED circuits have electrical contacts 16*a*, 16*b*, 16*c*, and 16*d* on the exterior of the substrate 22 and can be used "to electrically configure and/or control the operating voltage and/or

[1] The specification recites "26*b*" and "26*c*," but we do not find those items designated in Figures 1 or 2. Further, it is unclear whether the contact designation of "16*a*" and "16*b*" is correct in the context of this statement.

brightness level of the multi-voltage and/or multi-brightness LED lighting device." *Id.*

Figures 6 and 7 of the '705 patent, illustrating more schematic diagrams of multi-voltage and/or multi-brightness LED lighting devices, are reproduced below. Ex. 1001, 11:4–5, 11:24–28.

FIG. 6

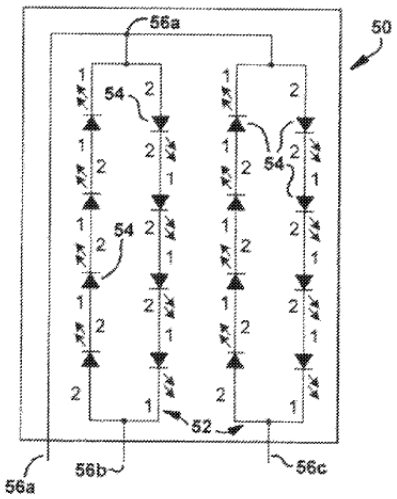
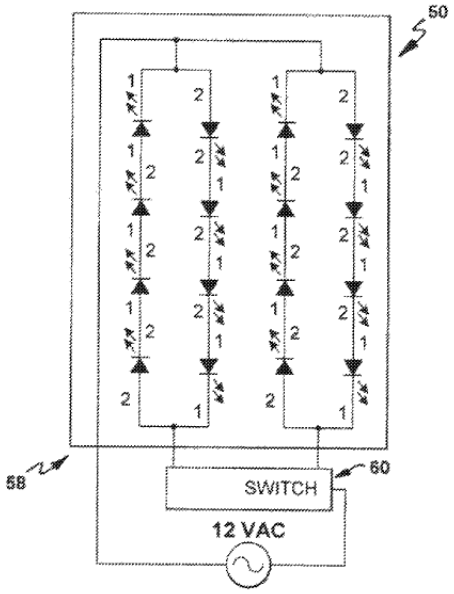


FIG. 7



Figures 6 and 7 illustrate schematic diagrams of multi-voltage and/or multi-brightness LED lighting devices.

Id.

The multi-voltage and/or multi-brightness LED lighting device 50 illustrated in Figure 6 includes at least two AC LED circuits 52, each of which have at least two LEDs 54 in series and anti-parallel relation. Ex. 1001, 11:4–23. The at least two AC LED circuits 52 have at least three electrical contacts 56*a*, 56*b* and 56*c*, and are electrically connected together in parallel at one end 56*a* and left unconnected at the opposing ends of the

electrical contacts 56*b* and 56*c*. *Id.* One side of an AC voltage source line is electrically connected to 56*a* and the other side of an AC voltage source line is individually electrically connected to 56*b* and 56*c* "with either a fixed connection or a switched connection thereby providing a first brightness when AC voltage is applied to 56*a* and 56*b* and a second brightness when an AC voltage is applied to 56*a*, 56*b* and 56*c*." *Id.* The multi-voltage and/or multi-brightness LED device shown in Figure 7, which is similar to the device shown in Figure 6, is further integrated within a lamp 58 and connected to a switch 60 to control the brightness level of the multi-voltage and/or multi-brightness LED lighting device. *Id.* at 11:24–28.

Figure 9 of the '705 patent, reproduced below, illustrates another schematic diagram of a multi-brightness LED lighting device. Ex. 1001, 11:42–49.

FIG. 9

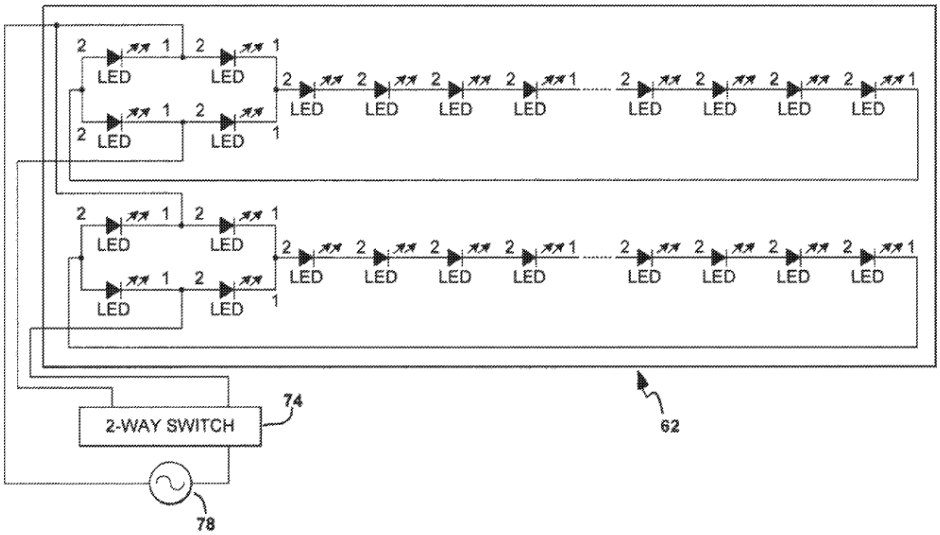


Figure 9 illustrates another schematic diagram of a multi-voltage and/or multi-brightness LED device including at least two single voltage LED circuits integrated with a single chip or within a substrate.

Id.

The device illustrated in Figure 9 includes: two sets of four LEDs, each set configured in a bridge circuit; two bridge-rectified series LED circuits having plural LEDs connected in series; and a switch 74 electrically connected between the multi-brightness LED lighting device 62 and an AC voltage source 78, to enable a change in the brightness level of the multi-brightness LED lighting device. Ex. 1001, 11:29–49.[2]

D. Illustrative Claims

The '705 patent includes twenty claims, of which claims 1–3, 5, 7–10, 12, 14–17, and 19 are challenged. Claims 1, 8, and 15 are independent claims, illustrative, and reproduced below.

1. [1.pre] An LED lighting system comprising:
[1.a] a first operating LED circuit and at least one additional LED circuit,
[1.b] at least one of the first operating LED circuit or the at least one additional LED circuit including at least two LEDs connected in either series or parallel, and
[1.c] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;
[1.d] a switch capable of at least one of:
(a) switching a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit, or
(b) switching the at least one additional LED circuit on or off,
[1.e] wherein (a) or (b) is selectable by a user switching the switch; and

[2] We refer to the description of Figure 8 with respect to Figure 9 because the description of Figure 9 references the description of Figure 8.

[1.f] an LED driver including an input configured to connect to an AC voltage power source, the LED driver configured to provide a DC voltage output to at least one of the first operating LED circuit or the at least one additional LED circuit,

[1.g] wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit.

8. [8.pre] An LED lighting system comprising:

[8.a] a first operating LED circuit and at least one additional LED circuit,

[8.b] at least one of the first operating LED circuit or the at least one additional LED circuit including at least two LEDs connected in either series or parallel, and

[8.c] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;

[8.d] a switch capable of at least one of:

(a) switching a brightness level of at least one of the first operating LED circuit or the at least one additional LED circuit, or

(b) switching the at least one additional LED circuit on or off,

[8.e] wherein (a) or (b) is selectable by a user switching the switch; and

[8.f] an LED driver including an input configured to connect to an AC voltage power source, the LED driver configured to provide a DC voltage output to at least one of the first operating LED circuit or the at least one additional LED circuit,

[8.g] wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit.

15. [15.pre] An LED lighting system comprising:
[15.a] a first operating LED circuit and at least one additional LED circuit,
[15.b] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;
[15.c] a switch capable of at least one of:
(a) switching a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit, or
(b) switching the at least one additional LED circuit on or off,
[15.d] wherein (a) or (b) is selectable by switching the switch; and
[15.e] an LED driver including an input configured to connect to an AC voltage power source, the LED driver configured to provide a DC voltage output to at least one of the first operating LED circuit or the at least one additional LED circuit,
[15.f] wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit.

Ex. 1001, 12:17–41, 12:62–13:19, 14:1–22 (bracketed identifying labels added in accordance with Petitioner's labeling, *see* Pet. 31–43, 52–57).

E. Evidence of Record

Petitioner relies on the following published patent application evidence.

Name	Patent Document	Exhibit
Bruning	US 2002/0070914 A1	1004
Doheny	US 2018/0035510 A1	1011
Van Winkle	US 2018/0206305 A1	1012

Evanicky	US 2002/0163529 A1	1013
Lee	US 2006/0022999 A1	1031

Pet. 4–5.

Petitioner also relies upon the Declaration of Dean Neikirk, Ph.D. (Ex. 1002, "Neikirk Declaration").

F. Asserted Challenges to Patentability

Petitioner challenges the patentability of claims 1–3, 5, 7–10, 12, 14–17, and 19 of the '705 patent on the following bases. Pet. 4–5.

Claim(s) Challenged	**35 U.S.C. §**	**Reference(s)/Basis**
3, 10, 17	112(a) 112(b)[3]	Lack of Written Description; Lack of Enablement; Indefiniteness
15, 17, 19	102[4]	Bruning

[3] 35 U.S.C. §§ 112(a), 112(b) are applicable to any patent application filed on or after September 16, 2012. The application underlying the '705 patent was filed in 2021. *Infra* § III (determining that at least one claim in the '705 patent has an effective filing date after March 16, 2013 and implicating AIA versions of the statues for each challenged ground).

[4] Per the Manual of Patent Examining Procedure (MPEP) § 2159.02 (9th ed. rev. 07.2022 Feb. 2023), America Invents Act ("AIA") 35 U.S.C. §§ 102, 103 took effect on March 16, 2013. AIA 35 U.S.C. §§ 102, 103 apply to any patent application that contains or contained at any time a claim to a claimed invention that has an effective filing date that is on or after March 16, 2013. If a patent application (1) contains or contained at any time a claim to a claimed invention having an effective filing date as defined in 35 U.S.C. § 100(i) that is on or after March 16, 2013 or (2) claims or ever claimed the benefit of an earlier filing date under 35 U.S.C. §§ 120, 121, or 365 based upon an earlier application that ever contained such a claim, then AIA 35 U.S.C. §§ 102, 103 apply to the application (i.e., the application is an AIA application). If there is ever even a single claim to a claimed invention

1–3, 5, 7–10, 12, 14–17, 19	103	Bruning, Evanicky
1–2, 5, 7–9, 12, 14–16, 19	102	Doheny
1–2, 5, 7–9, 12, 14–16, 19	103	Van Winkle
1–3, 5, 7–10, 12, 14–17, 19	103	Bruning, Lee

III. ELIGIBILITY FOR POST-GRANT REVIEW

As a threshold matter, we must determine whether the '705 patent is eligible for post-grant review. The post-grant review provisions set forth in section 6(d) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) ("AIA"), apply only to patents subject to the first-inventor-to-file provisions of the AIA. *See* AIA § 6(f)(2)(A) (stating that the provisions of Section 6(d) "shall apply only to patents described in section 3(n)(1)"). Patents subject to the first-inventor-to-file provisions are those that issue from any application "that contains or contained at any time . . . (A) a claim to a claimed invention that has an effective filing date as defined in [35 U.S.C. § 100(i)], that is on or after [March 16, 2013]; or (B) a specific reference under [35 U.S.C. §§ 120, 121,

in the application having an effective filing date on or after March 16, 2013, AIA 35 U.S.C. §§ 102, 103 apply in determining the patentability of every claimed invention in the application. This is the situation even if the remaining claimed inventions all have an effective filing date before March 16, 2013, and even if a claim to a claimed invention having an effective filing date on or after March 16, 2013, is canceled.

or 365(c)], to any patent or application that contains or contained at any time such a claim." AIA § 3(n)(1); *see supra* n.4.

Our rules require that each petitioner requesting post-grant review certify that the challenged patent is available for post-grant review. 37 C.F.R. § 42.204(a) ("The petitioner must certify that the patent for which review is sought is available for post-grant review."). In addition, "[a] petition for a post-grant review may only be filed not later than the date that is 9 months after the date of the grant of the patent or of the issuance of a reissue patent (as the case may be)." 35 U.S.C. § 321(c). Petitioner has the burden of demonstrating eligibility for post-grant review. *See Mylan Pharms. Inc. v. Yeda Res. & Dev. Co.*, PGR2016-00010, Paper 9 at 9–10 (PTAB Aug. 15, 2016).

A. The '705 Patent's Eligibility for Post-Grant Review

The '705 patent issued from U.S. Patent Application No. 17/181,802, filed on February 22, 2021 ("the '802 application"). Ex. 1001, codes (21), (22). The '802 application was filed as (i) a continuation of U.S. Patent Application No. 16/740,295, filed on January 10, 2020, now U.S. Patent No. 10,932,341 (Ex. 1006, "the '341 patent"), which is (ii) a continuation of U.S. Patent Application No. 16/274,164, filed on February 12, 2019, now U.S. Patent No. 10,537,001 (Ex. 1020, "the '001 patent"), which is (iii) a continuation of U.S. Patent Application No. 15/685,429, filed on August 24, 2017, now U.S. Patent No. 10,271,393 ("the '393 patent"), which is (iv) a continuation of U.S. Patent Application No. 14/172,644, filed on February 4, 2014, now U.S. Patent No. 9,750,098 ("the '098 patent"), which is (v) a continuation of U.S. Patent Application No. 13/322,796 (Ex. 1016,

"the '796 application"), filed as Application No. PCT/US2010/001597 (Ex. 1018, "the '597 PCT") on May 28, 2010, now U.S. Patent No. 8,648,539 ("the '539 patent"). *Id.* at code (63).

The '539 patent claims priority as a continuation-in-part of U.S. Patent Application No. 12/287,267, filed on October 6, 2008 ("the '267 application"), now U.S. Patent No. 8,179,055 ("the '055 patent"). Ex. 1001, code (63). The '705 patent also claims the benefit of U.S. Provisional Patent Application No. 61/217,215, filed on May 28, 2009 (Ex. 1014, "the '215 provisional"), and U.S. Provisional Patent Application No. 60/997,771, filed on October 6, 2007 (Ex. 1015, "the '771 provisional"). *Id.* at code (60).

Petitioner contends the '705 patent is eligible for post-grant review because (i) "the effective filing date of all claims [in the '705 patent] is no earlier than February 22, 2021" (Pet. 13–18); (ii) a parent application of the '705 patent that issued as the '341 patent contains claims having earliest effective filing dates on or after March 16, 2013 (Pet. 19–20); and (iii) a parent application of the '705 patent that issued as the '001 patent contains claims having earliest effective filing dates on or after March 16, 2013 (Pet. 20–23). Petitioner further contends the Petition was filed within nine months of the issue date of the '705 patent. Pet. 3.

To determine whether any of independent claims 1, 8, and 15 (which encompass all of claims 1–20) of the '705 patent confer PGR eligibility, we must determine whether any of these claims are *not* entitled to an effective filing date earlier than March 16, 2013. The "effective filing date" of a claimed invention is defined under 35 U.S.C. § 100(i)(1)(B) as being

"the filing date of the earliest application for which the patent . . . is entitled, as to such invention, to a right of priority under section 119, 365(a), or 365(b) or to the benefit of an earlier filing date under section 120, 121, or 365(c)." In order for a patent application to be entitled to a "right of priority" or an earlier filing date based upon an earlier-filed application, the earlier-filed application must have been disclosed "in the manner provided by section 112(a) (other than the requirement to disclose the best mode)." 35 U.S.C. §§ 119(e)(1), 120.

To determine whether any of independent claims 1, 8, and 15 of the '705 patent is entitled to a right of priority and effective filing date based on the '597 PCT (i.e., the first application in the priority chain filed before 2013), we determine whether the '597 PCT satisfies the following two requirements set forth in 35 U.S.C. § 112(a)—"(1) a written description of the subject matter of the claim(s) at issue in the later filed nonprovisional application, and (2) an enabling disclosure to permit one of ordinary skill in the art to make and use the claimed invention in the later filed nonprovisional application without undue experimentation." *See* MPEP § 211.05. "If there is a continuous chain of copending nonprovisional applications, each copending application must disclose the claimed invention of the later-filed application in the manner provided by 35 U.S.C. § 112(a) in order for the later-filed application to be entitled to the benefit of the earliest filing date." *Id.* If a claimed invention is not entitled to claim priority to a prior application, the effective filing date is "the actual filing date of the patent or the application for the patent containing a claim to the invention." 35 U.S.C. § 100(i)(1)(A).

Under 35 U.S.C. § 112(a), a patent specification shall contain a "written description" of the invention. The purpose of the written description requirement is to "ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification." *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 920 (Fed. Cir. 2004) (quoting *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)). This requirement protects the *quid pro quo* between inventors and the public, whereby the public receives "meaningful disclosure in exchange for being excluded from practicing the invention for a limited period of time." *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 970 (Fed. Cir. 2002).

To satisfy the written description requirement, the disclosure must reasonably convey to skilled artisans that the inventor possessed the claimed invention as of the filing date. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "One does that by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention." *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). "The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991). Such description need not recite the claimed invention *in haec verba* but must do more than merely disclose that which would render the claimed invention obvious. *Univ. of Rochester*, 358 F.3d at 923; *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566–67 (Fed. Cir. 1997); *see also PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306–07 (Fed. Cir. 2008) (explaining

that § 112, ¶ 1 "requires that the written description actually or inherently disclose the claim element").

B. Claims 1–20 of the '705 Patent

Petitioner argues that claims 1–20 of the '705 patent have an effective filing date on or after March 16, 2013, because none of the pre-AIA applications in the priority chain of the '705 patent discloses the limitation "wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit." Pet. 13–15; Ex. 1001, 12:39–41. In particular, Petitioner argues that "[t]his limitation was new matter added in the ['802 application] as filed on February 22, 2021," and that Patent Owner "replac[ed] [the] previous abstract with a new abstract reciting the new matter" and "provid[ed] new claims reciting the new matter." Pet. 13 (citing Ex. 1003, 17, 19–21). Petitioner submits that these "claims were allowed after [Patent Owner] distinguished the prior art based on this new matter." Pet. 13. Petitioner argues "[n]one of the applications to which the ['705 patent] claims priority discloses a switch that is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit, much less such a switch in combination with the other elements of the claims." Pet. 13.

More specifically, Petitioner argues (1) the pre-AIA '771 provisional (Ex. 1015) and pre-AIA '267 application (Ex. 1017) "do not disclose any 'switch' at all and, therefore, do not support any of the claims" (Pet. 14 (citing Ex. 1002 ¶ 35)); and (2) the pre-AIA '215 provisional (Ex. 1014), pre-AIA '796 application (Ex. 1016), and pre-AIA '597 PCT (Ex. 1018)

"disclose switches, but none of the disclosed switches is 'electrically connected' between the 'DC voltage output' of the driver and an LED circuit as claimed" (Pet. 14 (citing Ex. 1002 ¶ 36)) (collectively, "Pre-AIA Applications"). Instead, according to Petitioner, "these applications disclose switches electrically connected to AC voltages of the type [Patent Owner] distinguished during prosecution." Pet. 14 (citing Ex. 1014 ¶¶ 13 ("switch having at least two positions each of which is connected to at least one circuit within the multi-brightness single chip AC LED"), 45 (same), Figs. 12 ("12 VAC"), 15 ("120 VAC"), 19 (AC); Ex. 1016 ¶¶ 36 ("means of switching on at least one additional single voltage AC LED circuit"), 38, 57–60, Figs. 7 ("12 VAC"), 9 (AC); Ex. 1018, Figs. 7 ("12 VAC"), 9 (AC); Ex. 1002 ¶ 36).

Petitioner argues "[t]he dimmer switch disclosed in [the pre-AIA '215 provisional (Ex. 1014 ¶ 22)] does not disclose the claimed switch because [the '215 provisional] relates solely to AC driven LEDs," and thus, "the LED driver in [the '215 provisional] does not output DC." Pet. 14–15 (citing, *inter alia*, Ex. 1002 ¶ 37). Regardless, Petitioner argues, "the dimmer switch in [the '215 provisional (Ex. 1014 ¶ 22)] is not disclosed as being connected between the output of the LED driver and the LED circuits as claimed," and "there is no disclosure of combining this dimmer switch . . . with the other elements recited in the independent claims." Pet. 15 (citing Ex. 1002 ¶ 37).

Petitioner notes that the pre-AIA '796 application (Ex. 1016) and pre-AIA '597 PCT (Ex. 1018) "disclose bridge rectifiers, but the bridge rectifiers

are directly connected in series to the LEDs without an intervening switch." Pet. 15 (citing Ex. 1016 ¶ 59, Fig. 8; Ex. 1018 ¶ 58, Fig. 8; Ex. 1002 ¶ 38).

Petitioner argues the priority applications filed on or after March 16, 2013, underlying the '341, '001, '393, and '098 patents each "fail to disclose the claimed switch, in isolation or in combination with the other aspects of the claim, for the same reasons as the Pre-AIA Applications." Pet. 15 (citing, *inter alia*, Ex. 1002 ¶ 39). Petitioner submits that the earliest effective filing date for claims 1–20 of the '705 patent is the actual filing date of the '705 patent's application, February 22, 2021. Pet. 15.

Patent Owner, on the other hand, argues the '215 provisional discloses the subject limitation ("wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit") via the following description:

> [T]he LED circuit driver may be coupled to a dimmer switch that regulates voltage or frequency or may have integrated circuitry that allows for adjustability of the otherwise relatively fixed voltage and/or relatively fixed frequency output of the LED circuit driver. The LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits.

Prelim. Resp. 39–40; Ex. 1014 ¶ 22; *see* Prelim. Resp. 76–95 (Patent Owner providing a chart allegedly showing support in the '539 patent for claims 1–20 of the '705 patent.). Patent Owner argues this passage discloses (1) "a switch that adjusts the output of the LED driver to regulate the input to the LED circuit" (Prelim. Resp. 39–40); (2) that "the dimmer switch increases or decreases the voltage 'output of the LED driver' to regulate 'the input to the LED circuit,'" and that "the dimmer switch is 'coupled to' the

LED driver" (*id.*); and (3) "switches between the output of the LED driver and the LED circuit" (*id.* at 44 (citing Ex. 1014 ¶ 22); *see id.* at 41–44 (arguing, *inter alia*, the '215 provisional discloses "ordinary drivers that output DC voltages to drive LED circuits")). We find Patent Owner's arguments unavailing at this stage, and instead are persuaded by Petitioner's arguments.

First, Patent Owner ignores or at least does not sufficiently address the specific language of the subject limitation and its context within the claim as a whole. *See* Prelim. Resp. 39–46. In particular, Patent Owner does not explain how or why the above-cited disclosure in the '215 provisional actually or inherently discloses (i.e., shows the inventors' possession of) a switch electrically connected "*between* the *DC voltage output and* at least one of the first operating LED circuit or the at least one additional LED circuit," particularly where that same switch must also "switch[] a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit" or "switch[] the at least one additional LED circuit on or off," as recited, for example, in claim 1.

Second, Patent Owner ignores or at least does not sufficiently address the greater context of the above-cited disclosure in the '215 provisional. In particular, the '215 provisional includes twenty-one figures (LED circuit diagrams), but only three of them show a switch, and in each instance that switch is connected between an AC (not *DC*) voltage output and at least one of a first operating LED circuit or at least one additional LED circuit (*see* Ex. 1014, Figs. 12 ("2-way switch" for "2-way bulb"), 15 ("3-way switch" for "3-way bulb"), 19 ("2-way switch"); Pet. 14 (citing Ex. 1002 ¶ 36)).

Indeed, *none* of the twenty-one figures shows a switch electrically connected between a DC voltage output and at least one of a first operating LED circuit or at least one additional LED circuit as recited in claim 1. We determine at this stage that the above-cited disclosure in the '215 provisional (i.e., paragraph 22), when read in the context of the '215 provisional as a whole, including its twenty-one figures, does not support Patent Owner's proffered interpretation of that passage.

Finally, Patent Owner appears to concede that the '215 provisional, including the above-cited disclosure (i.e., paragraph 22), does not actually or inherently disclose the subject limitation, and instead argues that such disclosure would have rendered the limitation obvious to the skilled artisan: "[T]he '215 Provisional clearly *teaches* the dimmer switch *can be* placed at the output of the LED driver." Prelim. Resp. 40 (emphases added). However, it is well settled that a description that merely renders the invention obvious does not satisfy the written description requirement. *See Vasudevan Software, Inc. v. MicroStrategy, Inc.*, 782 F.3d 671, 682–83 (Fed. Cir. 2015); *Ariad Pharms.*, 598 F.3d at 1352; *Univ. of Rochester*, 358 F.3d at 923; *PowerOasis*, 522 F.3d at 1306–07. Similarly, Patent Owner faults Petitioner for ignoring that the dimmer switch disclosed in the '215 provisional allegedly "could be" combined with "other LED circuits disclosed in the specification" (Prelim. Resp. 40–41; *see id.* at 37–39, 45–46), yet fails to sufficiently explain how or why the '215 provisional actually or inherently discloses (i.e., shows the inventors' possession of) a switch electrically connected "*between* the *DC voltage output and* at least one of the first operating LED circuit or the at least one

additional LED circuit." Here again, Patent Owner appears to argue, improperly, that because the subject limitation allegedly would have been obvious to the skilled artisan, this evidences the inventors' possession thereof. *See id.* at 41 ("[T]he '215 Provisional *teaches* its different embodiments can be combined, including the dimmer switch." (emphasis added)).

Based on the record before us, and for the foregoing reasons (*see* Pet. 11–15), we determine that the '215 provisional (and other Pre-AIA Applications) does not provide sufficient written description support to reasonably convey to the skilled artisan that, as of the filing date of the '215 provisional, the inventors had possession of the limitation "wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit," as recited in claim 1. *See Ariad Pharm.*, 598 F.3d at 1351. Accordingly, on this record, we are persuaded that the '215 provisional lacks sufficient written description support for the inventions recited in claims 1–20 of the '705 patent. Thus, on this record, claims 1–20 of the '705 patent are not entitled to priority and, for purposes of institution, do not receive an effective filing date as early as that of the '597 PCT (i.e., 2010) or any other Pre-AIA Application.

In this case, the effective filing date of the '705 patent is only as early as the filing date of the '802 application from which the '705 patent matured. Petitioner shows persuasively that none of the applications intervening between the '597 PCT and the '802 application provide sufficient support (i.e., written description and enablement) for claims 1–20

of the ’705 patent. The ’802 application was filed on February 22, 2021, which is after March 16, 2013, and thus the first-inventor-to-file provisions of the AIA apply to our analysis of *all* of the challenged claims 1–3, 5, 7–10, 12, 14–17, and 19. *See supra* n.4.

We further determine that Petitioner filed the Petition within the 9-month statutory period for requesting post-grant review in accordance with 35 U.S.C. § 321(c). The ’705 patent issued on April 5, 2022 (*see* Ex. 1001, code (45)), and the Petition in this proceeding was accorded a filing date of January 5, 2023 (*see* Paper 5 (erroneously listing the date as “2022” instead of “2023”); Paper 1). Thus, the Petition was filed no later than nine months after the date of issuance of the ’705 patent.

Accordingly, based on the record before us and at this stage of the proceeding, we determine that the ’705 patent is eligible for post-grant review.

C. Claims 3, 10, and 17 of the ’705 Patent

Petitioner argues that dependent claims 3, 10, and 17 of the ’705 patent have an effective filing date on or after March 16, 2013, because none of the pre-AIA applications in the priority chain of the ’705 patent discloses the limitation “wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit.” Pet. 16–18; Ex. 1001, 12:44–47. Petitioner argues “[n]one of the Pre-AIA Applications discloses providing two different DC forward voltages to either the first operating LED circuit or the one additional LED circuit as required by these

claims, much less in combination with the LED system recited in the independent claims from which they depend." Pet. 16.

In particular, Petitioner argues "[n]o Pre-AIA Application discloses the claimed switch under the proper construction of 'forward voltage.'" Pet. 16 (citing Pet. § V.E.1). Petitioner contends that "forward voltage" is expressly defined in the intrinsic record as "the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs." Pet. 24 (discussing applicant's definition of this term in the prosecution history of Application No. 16/274,164); *infra* § V.C.[5] According to Petitioner, "[b]ecause each circuit has only one such minimum, there is only one 'forward voltage' for each circuit, and no switch can provide 'at least two different DC forward voltages' to either circuit." Pet. 16. As such, Petitioner contends, "[t]hese claims to impossible subject matter are not disclosed in any Pre-AIA Application." Pet. 16 (citing Pet. § VI; Ex. 1002 ¶ 42). We refer to these arguments as Petitioner's "impossibility of multiple minimum voltages" arguments and address them below in Section V.D, as it is necessary to first construe "forward voltage" (*infra* Section V.C) to reach a determination as to these arguments.

[5] Petitioner also argues, "[i]n the alternative, 'forward voltage' should be construed as 'a voltage in a diode's forward direction.'" Pet. 25. According to Petitioner, "[t]he concept of direction, such as 'forward' and 'reverse,' with respect to diodes is well known to a POSITA." Pet. 25. Petitioner further argues that "[i]f 'forward voltage' is not construed according to its express definition, then it should encompass any voltage in a forward direction." Pet. 25 (citing Ex. 1002 ¶ 64).

Petitioner also argues "[n]one of these embodiments disclose or enable the full breadth of these claims" because the claims encompass a situation in which the two different voltages are applied to only one of the LED circuits under any construction of "forward voltage" as it appears in the claim term "two different DC forward voltages." Pet. 16–18; *see id.* at 18 ("[T]here is no disclosure of a switch providing two different voltages to one 'or' the other LED circuit as claimed."). We address this argument in the following paragraphs because we need not first construe "forward voltage" to reach a determination as to this argument.

Patent Owner responds that the '597 PCT discloses "a 'multi-voltage AC or DC operable LED device' that allows for 'forward voltage drive selection.'" Prelim. Resp. 46–47 (citing Ex. 1018 ¶¶ 24, 25). Patent Owner points to paragraphs 28 and 30 of the '597 PCT, which disclose an LED device that is "driven with at least two different DC forward voltages," including "a first forward voltage drive level when the two single voltage LED circuits *are connected in parallel* and a second forward voltage drive level that is twice the level of the first forward voltage drive level when the at least two LED circuits *are connected in series*." Ex. 1018 ¶ 28 (emphases added). Under this scenario, Patent Owner argues "the 'LED device' still comprises a single circuit and the second DC forward voltage is different than the first DC forward voltage." Prelim. Resp. 48 (citing Ex. 1018 ¶¶ 28, 30). Patent Owner also turns to the "dimmer switch" in the '215 provisional and argues the switch "provides multiple levels of voltage to one or more LED circuits" (*id.*; *see id.* at 50 (discussing "dimmer switch")), and turns to "teach[ings]" of a switch having numerous positions and connections to

argue possession by the inventors of the subject limitation (*id.* at 50–51). We find Patent Owner's arguments unavailing.

Petitioner has the better position. Claims 3, 10, and 17 recite "wherein the switching of the switch provides at least two different DC forward voltages to *at least one of* the first operating LED circuit or the at least one additional LED circuit." Encompassed within the scope of each of claims 3, 10, and 17 are three situations: (1) when two different DC forward voltages are provided to *only* the first operating LED circuit; (2) when two different DC forward voltages are provided to *only* the at least one additional LED circuit; and (3) when two different DC forward voltages are provided to the first operating LED circuit *and* the at least one additional LED circuit. We agree with Petitioner's position—that it is necessary to support the full breadth of these claims (i.e., all three situations)—and not merely one of the three situations, as Patent Owner contends. *See* Pet. 16–18; Prelim. Resp. 46–47; *see also LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) ("Whether the flaw in the specification is regarded as a failure to demonstrate that the patentee possessed the full scope of the invention recited in [a] claim . . . or a failure to enable the full breadth of that claim, the specification provides inadequate support for the claim under section 112, paragraph one.").

Neither the cited portions of the '597 PCT nor the entirety of the '597 PCT provides written description support for situations (1) and (2) under *any* construction of "forward voltage" as it appears in the claim term "two different DC forward voltages" recited in claims 3, 10, and 17. The cited portions of the '597 PCT disclose "a first forward voltage drive level

when the two single voltage LED *circuits are connected in parallel* and a second forward voltage drive level that is twice the level of the first forward voltage drive level when the at least two LED *circuits are connected in series*." Ex. 1018 ¶ 28 (emphases added). That is, the forward voltage drive level in the '597 PCT depends on whether the (at least) two single voltage LED circuits are connected together in parallel or in series. This is distinguishable from situations (1) and (2) because the cited portions do not disclose that the two different forward voltage drive levels are applied to only one single voltage LED circuit—the cited portions describe only a situation in which at least two LED circuits are required.

Based on the record before us, and for the foregoing reasons (*see* Pet. 16–18), we determine that the '597 PCT (and other Pre-AIA Applications) does not provide sufficient written description support to reasonably convey to the skilled artisan that, as of the filing date of the '597 PCT, the inventors had possession of the limitation "wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit," as recited, for example, in claim 3. *See Ariad Pharm.*, 598 F.3d at 1351. Accordingly, on this record, we are persuaded that the '597 PCT lacks sufficient written description support for the inventions recited in claims 3, 10, and 17 of the '705 patent. Thus, on this record, dependent claims 3, 10, and 17 of the '705 patent are not entitled to priority and, for purposes of institution, do not receive an effective filing date as early as that of the '597 PCT (i.e., 2010) or any other Pre-AIA Application.

In this case, the effective filing date of dependent claims 3, 10, and 17 of the '705 patent is only as early as the filing date of the '802 application from which the '705 patent matured, given that we determined herein that independent claims 1, 8, and 15, from which claims 3, 10, and 17 depend, themselves contain subject matter having an effective filing date only as early as the filing date of the '802 application (*see supra* Section III.B). Patent Owner has not demonstrated that any of the applications intervening between the '597 PCT and the '802 application provide sufficient support (i.e., written description and enablement) for claims 3, 10, and 17 of the '705 patent. The '802 application was filed on February 22, 2021, which is after March 16, 2013, and thus the first-inventor-to-file provisions of the AIA apply to our analysis of challenged dependent claims 3, 10, and 17. We note that even if these first-inventor-to-file provisions of the AIA were implicated by only dependent claims 3, 10, and 17 of the '705 patent, we still apply the AIA versions, and not the pre-AIA versions, of 35 U.S.C. §§ 112, 102, and 103 to our analysis of *all* of the challenged claims. *See supra* n.4.

Accordingly, based on the record before us and at this stage of the proceeding, we determine that the '705 patent also is eligible for post-grant review based on the effective filing date of dependent claims 3, 10, and 17.

We note that the Board in its Final Written Decision in PGR2022-00009, in addressing the same subject limitation in claims 3, 10, and 17 of the '341 patent (i.e., "wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit") likewise determined that

the ’341 patent, the immediate parent to the ’705 patent, is eligible for post grant review based on these claims. Ex. 1032, 48–52 (“[W]e are persuaded that PGR eligibility of the ’341 patent is conferred by the effective filing date of claims 3, 4, 10, 11, 17, and 18.”).

D. Claims 3, 4, 10, 11, 17, and 18 of Parent ’341 Patent and Claims 1–15 of Parent ’001 Patent

Petitioner argues that claims 3, 4, 10, 11, 17, and 18 of the ’341 patent have an effective filing date on or after March 16, 2013 because none of the Pre-AIA Applications in the priority chain of the ’341 patent discloses the subject matter of these dependent claims. Pet. 19–20. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 51–54. As we determine that the ’705 patent is PGR-eligible on the basis of the effective filing date of its claims 1–20, and independently, on the basis of the effective filing date of its dependent claims 3, 10, and 17, we need not and do not herein determine whether any of claims 3, 4, 10, 11, 17, and 18 of the ’341 patent have an effective filing date on or after March 16, 2013. Nonetheless, as noted above, in its Final Written Decision in PGR2022-00009, the Board already determined that these claims in the ’341 patent confer PGR eligibility. Ex. 1032, 48–52.

Petitioner additionally argues that claims 1–15 of the ’001 patent have an effective filing date on or after March 16, 2013 because none of the Pre-AIA Applications in the priority chain of the ’001 patent discloses the subject matter of independent claims 1 and 11 and dependent claims 9 and 15 of the ’001 patent. Pet. 20–23. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 20–23. As we determine that the ’705 patent is

PGR-eligible on the basis of the effective filing date of its claims 1–20, and independently, on the basis of the effective filing date of its dependent claims 3, 10, and 17, we need not and do not herein determine whether any of claims 1–15 of the '001 patent have an effective filing date on or after March 16, 2013.

IV. DISCRETIONARY DENIAL – 35 U.S.C. § 325(d)

Patent Owner argues the Board should exercise its discretion to deny institution of post-grant review under 35 U.S.C. § 325(d) because each of Petitioner's five asserted prior art references, namely Bruning, Lee, Evanicky, Doheny, and Van Winkle, either was previously presented to the Office during prosecution of the '705 patent or is "cumulative and duplicative" of previously presented prior art references, and allegedly Petitioner has not demonstrated that the Office erred in allowing the '705 patent over that prior art. Prelim. Resp. 59–74. Based on the record before us, denying institution of post-grant review under § 325(d) is not appropriate in this case for the reasons discussed below.

Section 325(d) provides that, in determining whether to institute a post-grant 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." 35 U.S.C. § 325(d). The Board uses a two-part framework in determining whether to exercise its discretion under § 325(d), specifically:

> (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 [the] 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) ("*Advanced Bionics*").

In applying the two-part framework, we consider the non-exclusive factors set forth in *Becton, Dickinson and Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential in relevant part), which "provide useful insight into how to apply the framework" under § 325(d). *Advanced Bionics*, Paper 6 at 9. Those non-exclusive factors include:

> (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, Paper 8 at 17–18. "If, after review of factors (a), (b), and (d), it is determined that the same or substantially the same art or arguments previously were presented to the Office, then factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office." *Advanced Bionics*, Paper 6 at 10.

Under the first part of the § 325(d) framework, the evidence demonstrates that Bruning previously was presented to the Office before issuance of the '705 patent. Ex. 1001, code (56); Ex. 1003, 1595; Ex. 2039. Patent Owner argues "the Bruning, Evanicky, Lee, Doheny and Van Winkle references are each cumulative and duplicative of the hundreds of prior art references considered during prosecution." Prelim. Resp. 61; *see id.* at 61–72 (Patent Owner arguing cumulative and duplicative nature of these references.). Other than for Bruning, Petitioner disputes that its other asserted references are the same, cumulative, or duplicative of any other references presented to the Office during prosecution. Pet. 5–6. In the context of this case, because Bruning is the same art previously presented to the Office before issuance of the '705 patent, we need not consider *Becton, Dickinson* factors (b) and (d) and decide whether the other references (or arguments) are "each cumulative and duplicative *of the hundreds of prior art references*" submitted by Patent Owner (Prelim. Resp. 61 (emphasis added)). Even assuming these other references are cumulative, denial of institution is not warranted in this case based on our below analysis of examiner error. Thus, for efficiency purposes, we turn to the second prong of the *Advanced Bionics* framework (i.e., *Becton, Dickinson* factors (c), (e), and (f)), which in this case is dispositive. *See Ocado Group, PLC v.*

AutoStore Technology AS, IPR2021-00398, Paper 10 at 20 (PTAB July 21, 2021).

Becton, Dickinson factor (c) considers "the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection." *Becton Dickinson*, Paper 8 at 17. Both parties agree that neither Bruning nor any of Lee, Evanicky, Doheny, and Van Winkle were discussed by the Examiner during prosecution or were the basis of any rejection, alone or in combination. Pet. 5 ("None of the combination of Bruning and Evanicky (Ground 3), Doheny (Ground 4), Van Winkle (Ground 5), or the combination of Bruning and Lee (Ground 6) were considered during prosecution."), 5–6 ("[T]he examiner did not discuss either [Bruning or "Petitioner's Petition in PGR2022-00009"]."); Prelim. Resp. 72 ("[T]he examiner did not discuss Bruning . . . .").

Patent Owner argues (1) it submitted Bruning via an Information Disclosure Statement ("IDS") on December 7, 2021; (2) the "Examiner signed the IDS to indicate she had reviewed and considered Bruning on December 18, 2021"; (3) the "Examiner issued *the* notice of allowance" on December 22, 2021; and thus, (4) "the Examiner reviewed and considered Bruning and determined that the claims of the '705 Patent are patentable over Bruning." Prelim. Resp. 61–62 (citing Exs. 2039–2041) (emphasis added). But Patent Owner's characterization of the record here is incomplete at best.[6] Indeed, as noted by Petitioner, the Examiner issued the

[6] We remind the parties of their duty of candor and good faith pursuant to 37 C.F.R. § 42.11.

first Notice of Allowance on July 15, 2021 (Pet. 11 (citing Ex. 1003, 188), and Patent Owner even paid the issue fee on October 15, 2021 (Ex. 1003, 253), *before* Patent Owner presented Bruning via IDS to the Office. After this first Notice of Allowance, Patent Owner proceeded to file many IDSs with countless cited references, which now span the first *thirteen pages* of the '705 patent—*one* of which is Bruning. Patent Owner does not direct us to any substantive statement by the Examiner concerning any reference since the Examiner's initial Notice of Allowance (because the Examiner did not issue any substantive action after that first allowance, only ministerial "corrected" Notices of Allowance). *See generally* Ex. 1003. In this context particularly, the fact that neither Bruning nor any other asserted reference (or combinations thereof) was the basis of rejection weighs against exercising discretion to deny institution under § 325(d). *See Intel Corp. v. Qualcomm Inc.*, IPR2019-00128, Paper 9, 16 (PTAB May 29, 2019).

Becton, Dickinson factor (e) considers "whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art." *Becton, Dickinson*, Paper 8 at 18. Petitioner argues "[t]he examiner erred by failing to substantively discuss [Bruning as a basis] for invalidity, which [is] clearly meritorious." Pet. 6; *see id.* at 11 ("Although Bruning is of record, neither the examiner nor the applicant discussed it individually or in combination with Evanicky or Lee."). Petitioner also argues "[t]he examiner erred by failing to locate Evanicky, Doheny, Van Winkle, and Lee," which according to Petitioner render the challenged claims unpatentable. Pet. 10. Patent Owner argues the Examiner did not err because "many of the cited prior art references [i.e., those listed in the first

thirteen pages of the '705 patent] are duplicative of Bruning, Evanicky, Lee, Doheny and Van Winkle, and [these five asserted references] would add nothing to the examiner's thorough evaluation of patentability." Prelim. Resp. 73–74. We find Patent Owner's arguments unavailing.

We agree with Petitioner that the Examiner did not identify the pertinence of Bruning, in particular, or of any reference Patent Owner asserts is substantially similar to Evanicky, Lee, Doheny and Van Winkle or of the asserted combinations thereof, and did not issue a rejection based on their disclosures or combined teachings, and that this constitutes Examiner error. *See* Pet. 5–6, 10–11. Indeed, in the Final Written Decision in PGR2022-00009, the Board determined that Bruning *anticipates* independent claims 1, 8 and 15 and many other dependent claims of the parent '341 patent, which claims are substantially similar to the challenged claims in this case involving the child '705 patent. Ex. 1032, 52–68. Also, as discussed below in Section V, we determine that Petitioner has established that it is more likely than not that claims 1–3, 5, 7–10, 12, 14–17, and 19 of the '705 patent are unpatentable. We also find the Examiner's error here is further compounded by not having identified that the claims of the '705 patent are not entitled to claim priority to any of the filing dates of any of its ancestor applications, and thus, not having searched for and considered a substantial pool of prior art. *See supra* Sections III.B, III.C. Accordingly, *Becton, Dickinson* factor (e) weighs against exercising discretion to deny institution under § 325(d).

Becton, Dickinson factor (f) considers "the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the

prior art or arguments." *Becton Dickinson*, Paper 8 at 18. Patent Owner argues "[t]here is no additional evidence or facts in the petition that justify reconsideration of the prosecution based on Bruning, Bruning and Evanicky, Bruning and Lee, Doheny or Van Winkle." Prelim. Resp. 74. We disagree in the present context. The Petition presents or otherwise cites to substantial testimony of its expert, Dr. Neikirk, explaining the pertinence of Bruning and the other asserted references to the challenged claims, and the Examiner did not have the benefit of such testimony (i.e., technical interpretation of Bruning et al. from a skilled artisan)—indeed, the Examiner did not even have the benefit of anyone highlighting Bruning, out of the above-mentioned thirteen pages of prior art citations, as even potentially pertinent to the claims of the '705 patent.

As discussed below, we find the Neikirk Declaration probative to issues of patentability and helpful to our consideration of the prior art combinations that were not addressed by the Examiner. Accordingly, *Becton, Dickinson* factor (f) weighs against exercising discretion to deny institution under § 325(d).

Upon review of the relevant prosecution history, the art at issue, and the parties' arguments, we find that Petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims in the '705 patent, and that the *Becton, Dickinson* factors, when considered as a whole, do not weigh in favor of denying institution of post-grant review under 35 U.S.C. § 325(d). Accordingly, we decline to deny institution under § 325(d).

V. PATENTABILITY

A. Applicable Law

Petitioner challenges the patentability of claims 1–3, 5, 7–10, 12, 14–17, and 19 of the '705 patent on the grounds that certain claims are indefinite, lack sufficient written description, are non-enabled or are anticipated under 35 U.S.C. § 102 or obvious under 35 U.S.C. § 103 in light of various references, namely Bruning, Lee, Evanicky, Doheny, and Van Winkle. In a post-grant review, the petitioner has the burden from the onset to show *with particularity* why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim"); *cf. Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) ("[I]t was [Petitioner's] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable."). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

1. Indefiniteness

Under 35 U.S.C. 112(b), a patent specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . . . regards as the invention." This is commonly referred to as the definiteness requirement.

The Board applies in post-grant reviews the same indefiniteness standard as used in federal courts and the U.S. International Trade Commission under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014), and its progeny. USPTO Memorandum, *Approach To Indefiniteness Under 35 U.S.C. § 112 In AIA Post-Grant Proceedings* (Jan. 6, 2021). Under *Nautilus*, "[a] patent is invalid for indefiniteness if its claims, read in light of the patent's specification and prosecution history, fail to inform, with *reasonable certainty*, those skilled in the art about the scope of the invention." *Nautilus*, 572 U.S. at 898–99 (emphasis added). "[A] patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them," but the present standard recognizes that "absolute precision is unattainable." *Id.* at 899 (internal quotation marks omitted).

2. Written Description

We discuss the written description requirement under 35 U.S.C. § 112(a) in Section III.A above.

3. Enablement

"The requirement of enablement, stated in 35 U.S.C. § 112, enforces the essential '*quid pro quo* of the patent bargain' by requiring a patentee to teach the public how 'to practice the full scope of the claimed invention.'" *McRO, Inc. v. Bandai Namco Games America Inc.*, 959 F.3d 1091, 1099–100 (Fed. Cir. 2020) (quoting *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1244 (Fed. Cir. 2003)). "To prove that a claim is invalid for lack of enablement, a challenger must show . . . that a person of ordinary skill in the

art would not be able to practice the claimed invention without 'undue experimentation.'" *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d 1180, 1188 (Fed. Cir. 2014) (quoting *In re Wands*, 858 F.2d 731, 736–37 (Fed. Cir. 1988)). "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." *In re Wands*, 858 F.2d at 737. Those factual considerations, which have come to be known as the "*Wands* factors," include:

(1) the quantity of experimentation necessary,
(2) the amount of direction or guidance presented,
(3) the presence or absence of working examples,
(4) the nature of the invention,
(5) the state of the prior art,
(6) the relative skill of those in the art,
(7) the predictability or unpredictability of the art, and
(8) the breadth of the claims.

Id.

The Federal Circuit has explained that, "[a]fter the challenger has put forward evidence that some experimentation is needed to practice the patented claim, the factors set forth in *Wands* then provide the factual considerations that a court may consider when determining whether the amount of that experimentation is either 'undue' or sufficiently routine such that an ordinarily skilled artisan would reasonably be expected to carry it out." *Alcon Research*, 745 F.3d at 1188 (quoting *In re Wands*, 858 F.2d at 737). Although a specification does not need to "describe how to make and use every possible variant of the claimed invention, when a range is claimed, there must be reasonable enablement of the scope of the range." *McRO*,

959 F.3d at 1100 (citing *AK Steel*, 344 F.3d at 1244) (internal quotations omitted). "An artisan's knowledge of the prior art and routine experimentation can often fill gaps, interpolate between embodiments, and perhaps even extrapolate beyond the disclosed embodiments, depending upon the predictability of the art, and a patent need not teach, and preferably omits, what is well known in the art." *Id.* at 1102 (internal quotations and citations omitted).

4. Anticipation

To serve as an anticipatory reference under 35 U.S.C. § 102, "the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently." *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). "The identical invention must be shown in as complete detail *as is contained in the . . . claim*." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added). The elements must be arranged as required by the claim, "but this is not an '*ipsissimis verbis*' test," i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990) (citing *Akzo N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1479 & n.11 (Fed. Cir. 1986)).

5. Obviousness

A claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

(2007). 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 of record, objective evidence of obviousness or non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Secondary considerations may include the following: "commercial success, long felt but unsolved needs, failure of others, etc."[7] *Id.* The totality of the evidence submitted may show that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). When evaluating a combination of teachings, we must also "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The Supreme Court has made clear that we apply "an expansive and flexible approach" to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming a combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To reach this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v.*

[7] At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

Apotex, Inc., 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention. *Id.* "To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends:

> A person of ordinary skill in the art ("POSITA") as of October 6, 2007 (earliest listed priority date) or February 22, 2021 (actual filing date), would have had a bachelor's degree in electrical engineering, or similar technical field, with two years of relevant experience in the field of design and/or development of LEDs and circuits in the context of *lighting control systems*. An increase in experience could compensate for less education.

Pet. 23 (citing Ex. 1002 ¶ 61) (emphasis added).

Patent Owner contends:

> [T]he '705 Patent is directed toward LED lighting systems. Thus, the proper field is "the field of design and/or development of LEDs and circuits in the context of ***LED lighting systems***," not "***lighting control systems***." Indeed, as seen in '705 Patent Figs. 1–12, the disclosure is directed to systems and devices such as LED packages and lamps.

Prelim. Resp. 14–15 (citing Prelim. Resp. § II.A; Ex. 1001, code (57), 1:28–31 ("The present invention specifically relates to multiple voltage level and multiple brightness level LED devices, packages and lamps."), 1:43–48 ("The present invention specifically relates to multiple voltage level and multiple brightness level light emitting diode circuits, single chips, packages and lamps 'devices.'")).

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) (citations omitted). The level of ordinary skill in the art also is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

In this case, each of the challenged claims of the '705 patent recites an "LED lighting system." Accordingly, we preliminarily determine that the level of ordinary skill in the art is "a bachelor's degree in electrical engineering, or similar technical field, with two years of relevant experience in the field of design and/or development of LEDs and circuits," as Petitioner proposes, and that "the field of design and/or development" would be "in the context of lighting systems" as Patent Owner proposes, in which "[a]n increase in experience could compensate for less education." Prelim. Resp. 14–15; Pet. 23 (citing Ex. 1002 ¶ 61).

Our definition is consistent with the specification of the '705 patent and the cited references. Neither party argues, at least at this stage of the

proceeding, that the outcome of this case would differ based on our adoption of any particular definition of the level of ordinary skill in the art.

C. Claim Construction

We construe claims "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.200(b); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

In this context, claim terms "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *accord CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (There is "a 'heavy presumption' that a claim term carries its ordinary and customary meaning."). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317.

Moreover, the patent specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and

disavowal. *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). "The standards for finding lexicography and disavowal are exacting." *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014). To act as its own lexicographer, a patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Thorner*, 669 F.3d at 1365; *see Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("[W]ords in a claim are generally given their ordinary and customary meaning, [but] a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history."); *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (holding that an inventor may define specific terms used to describe an invention, but must do so "with reasonable clarity, deliberateness, and precision" and, if done, "'must set out his uncommon definition in some manner within the patent disclosure' so as to give one of ordinary skill in the art notice of the change" in meaning) (*quoting Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387–88 (Fed. Cir. 1992)). Similarly, disavowal requires that "the specification [or prosecution history] make[] clear that the invention does not include a particular feature." *SciMed Life Sys. Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001).

Petitioner sets forth proposed constructions for the terms "forward voltage," "switch," and "selectable by a user switching the switch." Pet. 24–28. According to Petitioner, "[b]ecause the prior art asserted herein discloses the preferred embodiment within the indisputable scope of the

claims, the Board need not construe the outer bounds of the claims as part of these proceedings." Pet. 24. Patent Owner sets forth a proposed construction for the term "forward voltage," but otherwise does not propose constructions for any other terms (other than their ordinary and customary meaning). Prelim. Resp. 15–33.

At this stage of the proceeding, we need only construe "forward voltage" for purposes of this Decision. We do not need to expressly construe any of the other claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that "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))).

1. Petitioner's Proposed Constructions of "Forward Voltage"

Petitioner contends "'[f]orward voltage' should be construed as 'the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs' based on the [Patent Owner's] express definition and disclaimer in the intrinsic record." Pet. 24. Petitioner contends that during prosecution of U.S. Patent Application No. 16/274,164 (an application to which the '705 patent claims priority) ("the '164 application"), Patent Owner expressly defined "forward voltage." Pet. 24–25 (citing Ex. 1023, 9 (Amendment)). In this regard, during prosecution of the '164 application, Applicant asserted:

> Colby fails to disclose that the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V or greater [as amended]. Stating that "US plugs operate on 120V 60Hz," the Office Action essentially relies on the disclosure of 'AC voltage' in Colby having a 'frequency of 60 Hz' as disclosing the forward voltage required by claim 1. *Office Action*, p. 4; *Colby*, 4:26–31. However, Applicant respectfully submits that the disclosure of an AC voltage supplied from a wall outlet does not disclose the forward voltage of an LED. The "forward voltage" of an LED circuit, as recited in claim 1, is the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs. *(See, e.g., LED Tutorial - Learn the basics,* https://www.baldengineer.com/led-basics.html.) Thus, the recited forward voltage is different from the AC voltage provided by a typical wall outlet.

Ex. 1023, 9.

Petitioner argues "[t]his express definition is consistent with the specification of the ['705] patent, which repeatedly states that each *individual* LED circuit has a 'single' and 'predetermined' 'forward voltage.'" Pet. 25 (citing Ex. 1001, 4:9–7:12; Ex. 1021, 28–30). Petitioner argues "[t]he forward voltage of an overall device is determined by whether the *individual* LED circuits were wired together during manufacture in series or parallel, but the forward voltage of the *individual* LED circuits never changes." Pet. 25 (citing Ex. 1002 ¶ 63).

Petitioner contends, "[i]n the alternative, 'forward voltage' should be construed as 'a voltage in a diode's forward direction.'" Pet. 25.

2. Patent Owner's Preliminary Response

First, Patent Owner argues that limiting "forward voltage" to a single minimum voltage would be inconsistent with the two forward voltages

recited in dependent claims 3, 10, and 17, is "contrary to the purpose of the '705 Patent (which is to provide multiple voltage levels and multiple brightness levels to LED circuits)," and "excludes numerous embodiments of the '705 Patent . . . , including the embodiments covering the stated purpose of the patent." Prelim. Resp. 19–21.

Second, Patent Owner argues that "the Petition does not even attempt to meet its burden to show that the statement in the prosecution history for the '001 Patent is a clear and unmistakable disavowal of the explicit teachings of the claims and specification of the grandchild '705 Patent," and the "Petitioner cannot meet this threshold because the statement is discussing different claim language in a different patent and different prior art in a context that is different than the construction proposed here." Prelim. Resp. 27–28; *see id.* at 25–27. Patent Owner similarly argues:

> [T]he statement Petitioner relies upon for its construction relates to different claims (requiring LED circuits that have "a forward voltage of 6V or greater") in a different patent in the context of prior art (Colby) that is not at issue here. . . . [T]he '705 Patent repeatedly and unambiguously require[s] that LED circuits have multiple forward voltages. Further, Petitioner has not even attempted to show that the single statement from the prosecution history it relies on is a clear and unmistakable disavowal of claim scope, and, in context, it is clear there is no such disavowal. It is legal error to elevate ambiguous and out-of context statements relating solely to different claims from a different patent discussing issues not present in the current PGR above the clear teachings of the claims and specification of the '705 Patent.

Id. at 31 (citations omitted).

Third, Patent Owner argues:

> "The minimum voltage difference required" does not rule out, and in fact implies the potential use of voltages in excess of that minimum. In other words, "minimum voltage difference required" implies that there are other, higher voltages that would also allow voltage to flow between an anode and a cathode of an LED. This interpretation is supported by the language of the claim being discussed ("a forward voltage of 6V or greater"), which again clarifies that a forward voltage can have values equal to or greater than the minimum voltage (there, 6V) to allow current to flow.
>
> Petitioner's interpretation is also contradicted by the website that the Applicant cited (www.baldengineer.com/led-basics.html) in support of the statement. Ex. 1023, 9; Ex. 2038 [Bald Engineer]. The website states "[t]he 'Forward Voltage' rating of a diode will determine the minimum voltage difference between the anode and cathode to allow current to flow." Read carefully, the website is drawing a distinction between forward voltage and minimum voltage—the forward voltage rating determines, but is not necessarily equal to, the minimum voltage. Further in the discussion, Bald Engineer cites to data sheets showing that LEDs have a forward voltage operating range, including a minimum and maximum voltage.

Prelim. Resp. 29–30 (citing Ex. 2038) (alteration in original). Patent Owner presents a portion of the Bald Engineer LED Tutorial, reproduced below, that shows a minimum and maximum value of a forward voltage for a particular LED. *Id.* at 30.

Items	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=20mA	1.8	---	2.2	V

Table Reproduced from Bald Engineer Tutorial
Describing Forward Voltage of an LED. Ex. 2038, 4.

Similarly, Patent Owner argues various "LED datasheets are clear that the type of commercially available LEDs that the '705 Patent is directed to

are not limited to a single minimum voltage." Prelim. Resp. 22; *see id.* at 22–25 (citing Ex. 2036 ("a publicly available datasheet for a typical LED, Samsung High Power LED LH502C"); Ex. 2037 ("a publicly available datasheet from the 2003 time frame for Cree MegaBright LEDs in the CxxxMB290-S0100 series"); Ex. 2018, 3–4; Ex. 2042, 4–5).

Finally, Patent Owner also argues that "Petitioner's second proposed construction ('a voltage in a diode's forward direction' (Pet.[] 25)) is also incorrect because it allows for forward voltages that could be less than the minimum operating voltage and greater than the maximum operating voltage." Prelim. Resp. 32–33.

3. Patent Owner's Proposed Construction of "Forward Voltage"

Disputing Petitioner's proposed constructions, Patent Owner contends "[t]he term 'forward voltage' in the '705 Patent should be construed as the operating voltage for the claimed LED circuit." Prelim. Resp. 16; *see id.* at 18–19. According to Patent Owner, its construction "uses the term 'operating' voltage for the LED circuit to clarify that the claim requires voltage in a range that will cause the LED circuit to 'operat[e]'—that is, illuminate in the manner intended." *Id.* at 17 (alteration in original). Patent Owner also argues the "'operating voltage'" can be a range of voltages." *Id.* at 17–18.

Patent Owner cites numerous portions of the specification allegedly in support of its position. Prelim. Resp. 17–18 (citing, *inter alia*, Ex. 1001, code (54) (Title), 1:41–43, 1:65–2:6, 3:15–18, 4:9–11, 4:42–44, 5:47–54). The cited portions of the specification disclose, *inter alia*, "multi-voltage

and multi-brightness LED lighting devices" as well as that "the forward voltage 'drives' the LED circuit." *Id.*

4. Analysis

Based on the record before us, we are persuaded that Petitioner's claim construction position is supported by substantial evidence, and thus, preliminarily construe "forward voltage" to mean "the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs." Patent Owner's arguments are unavailing as they urge us to ignore the intrinsic evidence (e.g., prosecution history disclaimer) in favor of extrinsic evidence (e.g., diode manufacturing specification data sheets).

The intrinsic record—including the disclosures in the '705 patent and the disclaimer made during prosecution of the '164 application underlying the parent '001 patent—persuades us that Petitioner's first construction, "the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs" is supported by the record.

One exception to the general rule that claim terms are given their ordinary and customary meaning is "when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Uship Intellectual Props., LLC v. United States*, 714 F.3d 1311, 1313 (Fed. Cir. 2013) (*quoting Thorner v. Sony Computer Entm't Am., LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)). During prosecution, Applicant "ma[de] clear that the invention does not include a particular feature"—that is, made clear that the claimed "forward voltage of 6V *or greater*" excludes a 120V AC

voltage from a wall outlet. *See GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (*quoting SciMed*, 242 F.3d at 1341) (disavowal requires that "the specification [or prosecution history] make[] clear that the invention does not include a particular feature").

As the '001 patent is a parent (or grandparent) to the '705 patent, we consider arguments made during the prosecution of the application underlying the '001 patent relevant to determining how "forward voltage" should be construed in the child patent, the '705 patent. Patent Owner cites no authority that would support disregarding the statements in the '001 patent for any reason, including because the '001 patent is a parent patent, the claim term "forward voltage" is used differently in the claim (i.e., claim 1 of the '001 patent recites "forward voltage *of 6V or greater*"), or that the statements made during prosecution were used to distinguish a different reference, Colby.

We agree with Petitioner that there is no basis in fact or law to ignore the express definition proffered during prosecution. *See Cordis Corp. v. Boston Scientific Corp.*, 658 F.3d 1347, 1356 n.5 (Fed. Cir. 2011) ("Arguments made in the course of prosecuting the [parent] application are relevant, however, because a disclaimer in the parent application carries forward into the construction of the same claim term in the child."). Patent Owner's recharacterization of its disclaimer over Colby as merely related to "AC mains" or wall outlets is unavailing. *See* Prelim. Resp. 28–29. When a claim is not ambiguous, we do not read limitations into the claim to preserve its validity. *See Bennett Regul. Guards, Inc. v. Atlanta Gas Light Co.*, 825 F. App'x 773, 777 (Fed. Cir. 2020) ("Claims are construed to preserve

validity only if, 'after applying all the available tools of claim construction . . . the claim is still ambiguous.'" (alteration in original)).

Even though, when read in isolation, 120V AC voltage might theoretically fall under the "or greater" portion of the amended claim limitation "forward voltage of 6V or greater," Patent Owner distinguished Colby on the basis that the 120V AC voltage from a wall outlet is not "*the minimum voltage* difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs." *See* Ex. 1023, 9 (emphasis added). Patent Owner's argument specifically identifies the claim language at issue—"forward voltage of 6V or greater"—and specifically states that it is not disclosed because Colby does not disclose *the minimum voltage* and *instead*, discloses something else, something larger—120V AC voltage. Accordingly, on this record, we conclude that Patent Owner disclaimed any scope or meaning of "forward voltage" beyond "the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs."

We also agree with Petitioner that the '705 patent repeatedly uses the term "forward voltage" in connection with single-voltage series LED circuits. *See* Pet. 25 (citing Ex. 1001, 4:9–7:12; Ex. 1021, 28–30; Ex. 1002 ¶ 63). These disclosures support Petitioner's position that there is only one "forward voltage" for an *individual* circuit (i.e., a single-voltage series LED circuit). In contrast, the forward voltage may differ based on the connection type, i.e., parallel or series, between at least *two* circuits. *See, e.g.*, Ex. 1001, 4:16–31. It is not apparent from the disclosure of the '705 patent that

brightness or light output levels of an LED device are changed based on driving an individual circuit (i.e., the single-voltage series LED circuit) with different forward voltages. *See generally id.* Instead, it appears that brightness levels or light output levels change based on adding or removing one or more individual circuits connected in series or parallel to a "first operating LED circuit." *Id.* at 3:50–56 ("It would further be advantageous to provide multi-brightness LED devices that can be switched to different levels of brightness by simply switching *additional circuits on or off in addition* to a first operating circuit within a single chip and or LED package." (emphasis added)).

D. Lack of Written Description and Enablement, and Indefiniteness of Dependent Claims 3, 10, and 17

Dependent claims 3, 10, and 17 recite "wherein the switching of the switch provides at least two different DC forward voltages to *at least one of* the first operating LED circuit or the at least one additional LED circuit." Ex. 1001, 12:44–47 (emphasis added). Petitioner contends dependent claims 3, 10, and 17 are invalid because they lack written description and enablement under 35 U.S.C. § 112(a) and because they are indefinite under 35 U.S.C. § 112(b). Pet. 28–30. Patent Owner opposes. Prelim. Resp. 96–100.

Petitioner argues that "[u]nder the correct construction of 'forward voltage,' each of the 'first operating LED circuit' and the 'one additional LED circuit' has a single 'forward voltage' because each has a single 'minimum.'" Pet. 29 (citing Pet. § V.E.1). According to Petitioner, and the testimony of its expert, Dr. Neikirk, "[b]ecause each circuit has only a single

'forward voltage,' no switch can provide 'at least two different' forward voltages to either circuit," and thus, "under the correct construction of 'forward voltage,' these claims are to impossible subject matter that is not disclosed in the specification." Pet. 29 (citing Ex. 1002 ¶¶ 70–71). We refer to these arguments as Petitioner's "impossibility of multiple minimum voltages" arguments.

Petitioner submits that "[a] claim to impossible subject matter is invalid as indefinite," and "because the specification does not describe or enable this impossible subject matter, the claims are invalid for lack of written description and lack of enablement." Pet. 29.

Patent Owner disputes Petitioner's arguments here by asserting that Petitioner relies on a "nonsensical construction" of "forward voltage." Prelim. Resp. 96–100. Because we agree at this stage with Petitioner's proposed construction (*see supra* Section V.C), we find Patent Owner's arguments unavailing. We also note that this supposedly "nonsensical construction" actually is *not* Petitioner's, *but Patent Owner's*—it is Patent Owner that expressly stated during prosecution that "forward voltage" has such a construction to secure allowance of the then-pending claims. *See* Ex. 1023, 9 ("The 'forward voltage' of an LED circuit, as recited in claim 1, is the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow through the LEDs.").

Patent Owner argues that "the specification clearly and repeatedly teaches that LED circuits may have more than one voltage level." Prelim. Resp. 98 (citing, *inter alia*, Ex. 1001, 3:4–7 ("It would further be

advantageous to have a multi-voltage and/or multi-brightness circuit that can provide options in voltage level, brightness level and/or AC or DC powering input power preference."), 3:8–15 ("It would further be advantageous to provide multiple voltage level . . . LED circuits . . . that can easily be electrically configured for at least two forward voltage drive levels.")). Patent Owner argues that "this multiple voltage level functionality 'is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration,'" where "[t]he LED circuits use 'a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.'" *Id.* at 98–99 (citing, *inter alia*, Ex. 1001, 3:15–23, 8:10–15, 12:10–14, Fig. 12). Patent Owner argues:

> [W]hen the LED circuits of [Figure] 12 are connected in series, they would form an LED circuit with one forward voltage. However, when the LED circuits are connected in parallel, the resulting LED circuit would have a second (different) forward voltage. In other words, a central teaching of the '705 Patent is that its LED circuits can be connected in different configurations (e.g., series or parallel) and that these different configurations may have different forward voltages.

Id. at 99–100; *see id.* at 97 ("Two different forward voltages can clearly be applied to the two different LED circuits—that is, one forward voltage for the 'first operating LED circuit' and a different forward voltage for the 'one additional LED circuit.'").

1. 35 U.S.C. § 112(a)

With respect to the *written description requirement*, we are persuaded on this record that under the construction of "forward voltage" preliminarily adopted in Section V.C, written description support is lacking in the '802

application underlying the '705 patent for claims 3, 10, and 17, for reasons substantially similar to those set forth above in Section III.C and as discussed below.[8]

We find Patent Owner's arguments unpersuasive at this stage because the configuration changes that Patent Owner references in the '802 application (and the '705 patent) are disclosed as being based on the type of wiring connection, parallel or serial, between *two* circuits, i.e., the "at least one of the first operating LED circuit" and the "the at least one additional LED circuit." For reasons similar to what we discussed above in Section III.C, the disclosures of the '802 application and the '705 patent do not provide sufficient written description support for (and do not address) the situations in which (1) the two different DC forward voltages are provided to *only* the first operating LED circuit, and (2) two different DC forward voltages are provided to *only* the at least one additional LED circuit. We also note that Patent Owner does not direct us to (and we do not find at this stage of the proceeding) any disclosure in the '802 application sufficiently describing a switch that is capable of changing the configuration of the interconnection between LED circuits from series to parallel or vice versa, or a switch that is the electrical component that "provides at least two different DC forward voltages" to "the first operating LED circuit" or to "the at least one additional LED circuit," as encompassed by the scope of

[8] Here and below, we consider our discussion of the '597 PCT (e.g., in Section III.C above) relevant to our analysis of the '802 application because the '597 PCT and '802 application have substantially similar disclosures.

claims 3, 10, and 17 (particularly as recited in the context of underlying independent claims 1, 8, and 15).

To the extent that Patent Owner argues that Petitioner is attempting to read any particular embodiment into claims 3, 10, and 17, we disagree. *See generally* Prelim. Resp. 96–100. On this record, none of the embodiments, considered individually or in combination, discloses or enables the full breadth of the claims at issue.

Based on the record before us, at this stage of the proceeding, we determine that Petitioner has established that it is more likely than not that claims 3, 10, and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of sufficient written description support in the '802 application underlying the '705 patent.

Separate from the written description requirement, 35 U.S.C. § 112(a) includes an *enablement* requirement. *Ariad Pharms.*, 598 F.3d at 1344. Enablement requires the specification of a patent to "teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)); *see also Amgen v. Sanofi*, No. 21-757, 598 U.S. __, slip op. at 13 (2023) ("[T]he specification must enable the full scope of the invention as defined by its claims.").

Petitioner's "impossibility of multiple minimum voltages" arguments with respect to the inventions recited in claims 3, 10, and 17 are persuasive at this stage of the proceeding to show a lack of written description as discussed above, as well as to show a lack of enablement, indefiniteness (as

discussed below), and PGR eligibility (i.e., the analysis deferred from Section III.C above). Based on the record before us, we preliminarily agree with Petitioner that, "[b]ecause each circuit has only one such minimum, there is only one 'forward voltage' for each circuit, and no switch can provide 'at least two different DC forward voltages' to either [individual] circuit." *See* Pet. 16, 29 ("Because each circuit has only a single 'forward voltage,' no switch can provide 'at least two different' forward voltages to either [individual] circuit," and thus, "under the correct construction of 'forward voltage,' these claims are to impossible subject matter that is not disclosed in the specification." (citing Ex. 1002 ¶¶ 70–71)).

As we discussed above, the '802 application (and the '705 patent) addresses two different forward voltages based on the type of wiring connection, parallel or serial, between *two* circuits, i.e., the "at least one of the first operating LED circuit" and "the at least one additional LED circuit." Similar to what we discussed above in Section III.C, the disclosures of the '802 application and the '705 patent do not address or explain how it would even be possible to apply two different minimum voltages for the very same circuit as would be necessary in two of the three situations encompassed by the scope of claims 3, 10, and 17, i.e., the situations in which: (1) the two different DC forward voltages are provided to *only* the first operating LED circuit; and (2) two different DC forward voltages are provided to *only* the at least one additional LED circuit.

We further note that the portions of the '802 application corresponding to the portions of the '705 patent cited by Petitioner refer to the disclosed LED circuits as "single voltage LED circuits." *See* Pet. 25

(citing Ex. 1001, 4:9–7:12; Ex. 1021, 28–30; Ex. 1002 ¶ 63). This disclosure further lends support to a finding that multiple minimum voltages are not applied to individual circuits, the single-voltage LED circuits, unless at least two of these single voltage LED circuits are connected together.

Based on the record before us, at this stage of the proceeding, we determine that Petitioner has established that it is more likely than not that claims 3, 10, and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of enablement.

For the purposes of the analysis of PGR eligibility above in Section III.C, we also preliminarily determine that neither the '597 PCT nor the applications intervening between the '597 PCT and the '802 application provide sufficient written description support or enabling disclosure for claims 3, 10, and 17 for the same reasons discussed above.

2. 35 U.S.C. § 112(b)

We are persuaded that it is more likely than not that the '802 application underlying the '705 patent "fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention" for reasons similar to those discussed above in Section V.D.1. *Nautilus*, 572 U.S. at 901. That is, it is unclear what the scope of claims 3, 10, and 17 is, given that the ordinarily skilled artisan could not possibly apply two different DC forward voltages, under the construction of "forward voltage" that we preliminarily adopted in Section V.C, to only one of the two single voltage LED circuits, i.e., (1) only the at least one of the first operating LED circuit, or (2) only the at least one additional LED circuit, as is encompassed by the scope of claims 3, 10, and 17. We are persuaded that it is more likely

than not that claims 3, 10, and 17 are indefinite, at this stage of the proceeding, because it would have been impossible to apply two different minimum voltages (i.e, the claimed "two different DC forward voltages") to only one single-voltage LED circuit (i.e., only one of the claimed first operating circuit and the at least one additional circuit). *See Synchronoss Techs., Inc. v. Dropbox, Inc.*, 987 F.3d 1358, 1366–67 (Fed. Cir. 2021) (finding the challenged claims indefinite and therefore invalid because they were "nonsensical and require an impossibility—that the digital media file contain a directory of digital media files").

Based on the record before us, at this stage of the proceeding, we determine that Petitioner has established that it is more likely than not that claims 3, 10, and 17 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

We note that the Board in its Final Written Decision in PGR2022-00009, in addressing the same subject limitation in claims 3, 10, and 17 of the '341 patent (i.e., "wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit"), determined these claims lacked sufficient written description support, lacked enablement, and were indefinite by a preponderance of the evidence of record in that case. Ex. 1032, 26–43.

E. Anticipation of Claims 15, 17, and 19 by Bruning

Petitioner contends independent claim 15 and claims 17 and 19, which depend therefrom, are unpatentable under 35 U.S.C. § 102 as anticipated by Bruning (Ex. 1004). Pet. 30–45. At this stage of the proceeding, Patent

Owner does not contend that any limitation in any of claims 15, 17, and 19 is absent in Bruning. *See generally* Prelim. Resp. Rather, as discussed above in Sections III and IV, Patent Owner argues the '705 patent is not eligible for post-grant review and that the Board should exercise discretion to deny the Petition under § 325(d) (*see id.* at i–iii)—we preliminarily find both sets of arguments unpersuasive. *See supra* Sections III, IV. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on our review of the record before us, we determine that Petitioner has established that it is more likely than not that claims 15 and 19[9] are unpatentable as anticipated by Bruning, as discussed below. We turn first to an overview of Bruning.

1. Overview of Bruning

Bruning is titled "Control and Drive Circuit Arrangement for Illumination Performance Enhancement with LED Light Sources." Ex. 1004, code (54) (Title). Bruning "relates to backlighting of display panels, including the backlighting in LCD panels." *Id.* ¶ 1. More particularly, Bruning discloses a backlight for an LCD display comprised of an array of LEDs, the backlight driven and controlled by a fast pulse power converter to provide a response time for the backlight on the order of microseconds. *Id.* at code (57) (Abstract).

[9] We do not address whether Bruning discloses the limitation recited in dependent claim 17 because we determine at this stage that this limitation is indefinite under 35 U.S.C. § 112(b). *See* Sections V.D.2, E.3.

Bruning's Figure 4, reproduced below, illustrates an LED backlight. Ex. 1004 ¶ 31.

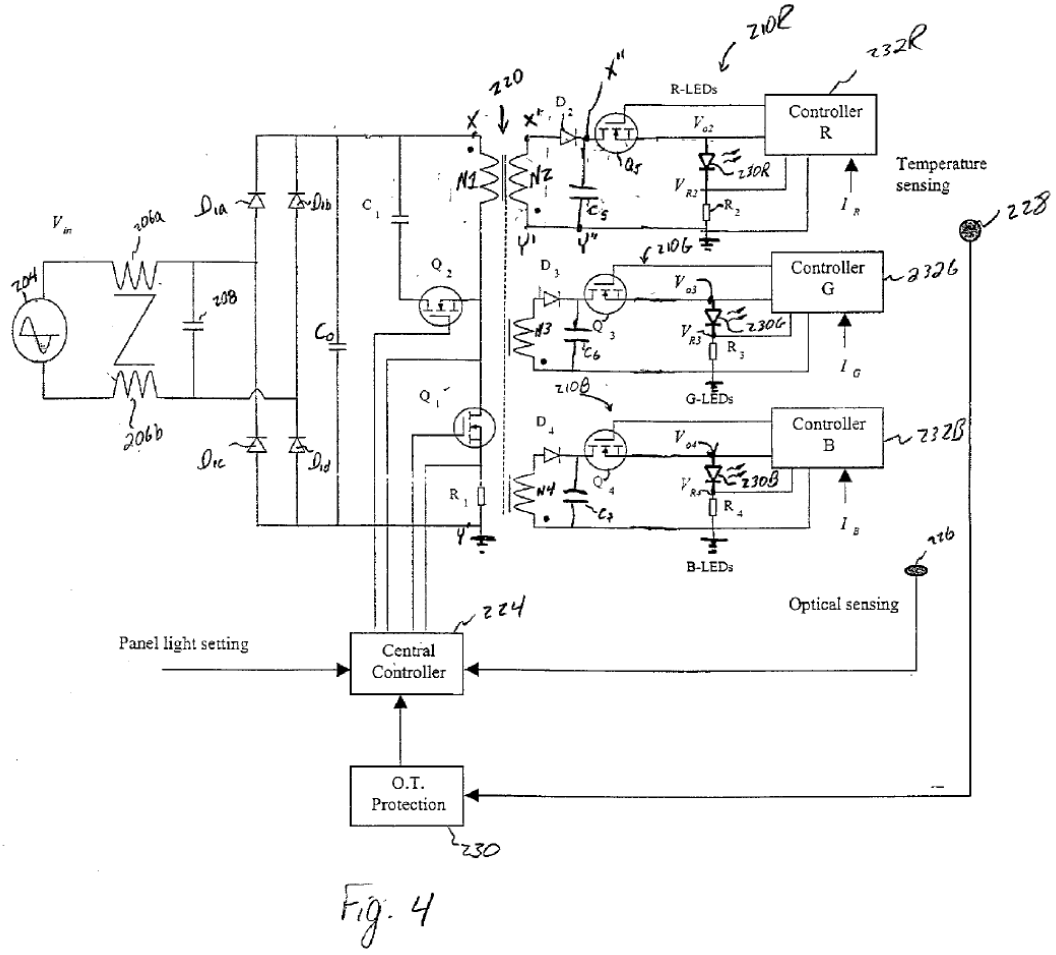


Fig. 4

Figure 4 illustrates an LED backlight. *Id.*

Figure 4 illustrates drive circuitry for an LED backlight. Ex. 1004 ¶ 31. The drive circuitry includes: an AC voltage source 204 connected to inductors 206a, 206b and capacitor 208; diodes D_{1a}, D_{1b}, D_{1c}, D_{1d} comprising a full wave rectification bridge circuit which provides full wave rectification of the AC input of AC source 204; capacitor C_o for smoothing the rectified AC signal further into a first order DC voltage that is provided across points X–Y in Figure 4; and converter circuitry between points X and Y. *Id.*

¶¶ 31–32. The converter circuitry between points X and Y in Figure 4 includes a multiple output transformer 220, a switch Q_1, and a resistor R_1. *Id.* ¶ 32. Multiple output transformer 220 has a primary winding N1 and three secondary windings N2, N3, and N4 each magnetically coupled to the primary winding. *Id.* Secondary windings N2, N3, and N4 are included in LED sub-array circuits 210R, 210G, and 210B of an RGB LED array. *Id.*

Switch Q_1 is cycled on and off by a central controller 224. Ex. 1004 ¶ 33. When Q_1 is on (closed), the rectified voltage applied across X–Y drops across primary winding N1; and when Q_1 is off (open), the rectified voltage drops across switch Q_1. *Id.* When switch Q_1 is "off," the circuit between points X and Y is open. *Id.* ¶ 34. In addition, a negative voltage appears across primary winding N1, induced by secondary windings N2–N4, when Q_1 is off. *Id.* During the "on" portions of a switching cycle of switch Q_1, a voltage $V_{X'-Y'}$ is created across points X' and Y' in LED sub-array 210R due to the induced voltage in secondary winding N2 created by current i_{N1}, in primary winding N1. *Id.* ¶ 35. Similar voltages are created in the other secondary windings (N3 and N4). *Id.*

LED sub-arrays 210R, 210G, and 210B generate the light output of the LED backlight 200 using applied voltages V_{R0}, V_{G0}, and V_{B0}, respectively. Ex. 1004 ¶ 40. Since turns ratios between primary winding N1 and secondary windings N2, N3, and N4 of transformer 220 are fixed, voltages V_{R0}, V_{G0}, V_{B0} applied to LED sub-arrays 210R, 210G, and 210B, respectively, are controlled by controller 224 by controlling the duty cycle of switch Q_1. *Id.* ¶ 38. And, since voltages V_{R0}, V_{G0}, V_{B0} establish the maximum level of light output of LED sub-arrays 210R, 210G, and 210B,

respectively, the maximum level of light output by LED sub-arrays 210R, 210G, and 210B, respectively, are likewise controlled by controller 224, by controlling the duty cycle of switch Q_1. *Id.* In addition, a "panel light setting" input to central controller 224 (controlled by a user or by other input, including video input) adjusts the duty cycle of Q_1 and thus the maximum light output of LED sub-arrays 210R, 210G, and 210B. *Id.*

The drive circuitry in Figure 4 further includes a switch Q_5 and controllers 232R, 232G, and 232B. *See* Ex. 1004, Fig. 4. Switching Q_5 on and off in a cyclical manner causes the current through red LED 230R to rise and fall in a cyclical manner, thus resulting in a cyclical rise and fall in the light output of red LED 230. *Id.* ¶ 42. Controller 232R independently controls the switching of switch Q_5. *Id.* The duty cycle set by controller 232R controls the amount of time that Q_5 is turned on and off in a switching cycle. *Id.* Controller 232R and switch Q_5 have response times on the order of microseconds; thus, the duty cycle may be on the order of microseconds. *Id.* Similarly, the light output of green and blue LED sub-arrays 210G and 210B are independently controlled by the independent controllers 232G and 232B. *Id.* ¶ 44. Thus, independent controllers 232R, 232G, and 232B determine the relative output of red, green, and blue light, respectively, output by LED sub-arrays 210R, 210G, and 210B, respectively. *Id.* Since the duty cycle of each controller (and the resulting cyclical change of light output) is on the order of microseconds, the eye integrates the separate color outputs into a resulting color composite. *Id.* Thus, controllers 232R, 232G, and 232B may be used to regulate the color point and/or color content of the generated white light. *Id.*

We further discuss below the disclosure of Bruning in connection with Petitioner's arguments.

2. Independent Claim 15

Petitioner provides an element-by-element analysis of independent claim 15 in relation to Bruning. Pet. 31–43. Petitioner's analysis relies on testimony from its technical expert, Dr. Neikirk. Ex. 1002 ¶¶ 72–88.

a) [15.pre] An LED lighting system comprising:

Petitioner contends Bruning meets the preamble by disclosing "an LED lighting system (Figs. 2, 4) comprising an LED backlight for a mobile device." Pet. 31 (citing, *inter alia*, Ex. 1004, codes (54), (57), Figs. 1–5, ¶¶ 4, 7, 9–15, 24–29, 31–51; Ex. 1002 ¶ 73). Patent Owner does not contend otherwise at this stage of the proceeding. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. For the reasons stated in the Petition at page 31, Petitioner sufficiently establishes that Bruning discloses the preamble of claim 15.[10]

b) [15.a] a first operating LED circuit and at least one additional LED circuit

Petitioner contends "Bruning discloses a first operating LED circuit (e.g., LED sub-array circuit 210R) and at least one additional LED circuit (e.g., LED sub-array circuits 210G and 210B)." Pet. 31–33 (citing Ex. 1004

[10] Neither party at this stage of the proceeding argues that the preamble of claim 15 is limiting. We likewise express no view herein.

¶¶ 31–44 (paragraph 32 disclosing "LED sub-array circuits 210R, 210G, 210B")), Fig. 4; Ex. 1002 ¶ 74.

For the reasons stated in the Petition at pages 31–33, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

c) [15.b] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit

Petitioner contends "Bruning discloses the at least one additional LED circuit (e.g., sub-array circuits 210G and 210B emitting green and blue light, respectively) being configured to emit a different color light compared to the first operating LED circuit (LED sub-array circuit 210R emitting red light)." Pet. 33 (citing Ex. 1004 ¶¶ 4, 7, 9 ("an array or bank of red, green and blue ('RGB') LEDs"), 11–12 ("red, green and blue LEDs"), 14 ("red, green and blue light"), 15 ("red, green and blue"), 24–29, 37, 40 ("green and blue LED sub-arrays 210G, 210B"), 44, 48–50; Ex. 1002 ¶ 76).

For the reasons stated in the Petition at page 33, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

d) *[15.c] a switch capable of at least one of: (a) switching a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit, or (b) switching the at least one additional LED circuit on or off*

Petitioner contends "Bruning discloses a switch (e.g., color-specific switches (Q_3, Q_4, Q_5) alone or combined with control circuitry) capable of at least one of: (a) switching a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit, or (b) switching the at least one additional LED circuit on or off." Pet. 33 (citing Ex. 1004 ¶¶ 41–46, 50, Figs. 4b–5).

As for alternative (b), Petitioner contends "Bruning discloses a switch (e.g., color-specific switches (Q_3, Q_4) alone or combined with control circuitry) capable of [] switching the at least one additional LED circuit (e.g., LED sub-array circuits 210G and 210B) on or off. Pet. 34 (citing Ex. 1004 ¶¶ 41–46, 50, Figs. 4b–5; Ex. 1002 ¶ 78). Petitioner argues:

> Bruning discloses the color-specific switches with respect to Q_5 for the red LED circuit 210R, but explicitly teaches the same disclosure applies to Q_3 and Q_4 for LED circuits 210G and 210B. In short, Bruning discloses that if Q_5 is switch on/closed, the voltage V_{R0} is applied to the LED circuit 210R, current flows through the LED circuit, and the LED circuit is switched on. Bruning discloses that if Q_5 is switched off/opened, no voltage is applied to the LED circuit, no current flows, and the LED circuit is switched off.

Pet. 34 (citing Ex. 1004 ¶¶ 40–41; Ex. 1002 ¶ 79). Petitioner further argues "Bruning discloses the LED circuits can be turned on and off independently by their respective color-specific switches." Pet. 34–36 (citing Ex. 1004 ¶¶ 11, 12, 25, 26, 40–45, 46, 50, Figs. 4–4d; Ex. 1002 ¶¶ 80–82).

As for alternative (a), Petitioner contends "Bruning discloses a switch (e.g., color-specific switches (Q_3, Q_4, Q_5) alone or combined with control circuitry) capable of at least one of [] switching a voltage level input to at least one of the first operating LED circuit (circuit 210R) or the at least one additional LED circuit (circuit 210G or 210B)." Pet. 37. In particular, Petitioner argues:

> Bruning discloses that the color-specific switches can be operated in their active regions to modulate the amplitude of the voltage pulse, i.e., to change the voltage level input to the LED circuit. Thus, instead of the switch turning the LEDs on and off, the LEDs would stay on, but the amplitude of the voltage pulse, and thus the current running through the LEDs and the brightness of the LEDs, switches between high and low values depending on the state of the switch. Bruning teaches that the controller can monitor the voltage across the LEDs to adjust the switching. In addition to the explicit disclosures in Bruning that the amplitude of the voltage is changed, [the skilled artisan] would have understood from the diode equation that the periods of high and low current through the LEDs (and their brightness) are caused by the high and low voltage levels input to the LED circuit.

Pet. 37–38 (citing Ex. 1004 ¶¶ 43, 46, Fig. 5; Ex. 1002 ¶ 83).

For the reasons stated in the Petition at pages 33–38, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

e) [15.d] wherein (a) or (b) is selectable by switching the switch

Petitioner contends "Bruning discloses wherein (a) or (b) is selectable by switching the switch (e.g., color-specific switches (Q_3, Q_4, Q_5))." Pet. 38

(citing, *inter alia*, Petitioner's analysis of limitation 15.c; Ex. 1002 ¶¶ 84–85). Petitioner argues that "[c]laim 15 does not require that the switch be selectable by a user," so "Bruning's disclosure that these switches may be switched by controllers (e.g., 232G, 232B) based on algorithms satisfies this claim [limitation]." Pet. 38 (citing, *inter alia*, Ex. 1002 ¶ 85).

For the reasons stated in the Petition at page 38, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

f) [15.e] an LED driver including an input configured to connect to an AC voltage power source, the LED driver configured to provide a DC voltage output to at least one of the first operating LED circuit or the at least one additional LED circuit

Petitioner contends:

> Bruning discloses an LED driver ("drive circuitry") including an input configured to connect to an AC voltage power source ("ac input of ac source 204"), the LED driver configured to provide a DC voltage output (e.g., V_{R0}, V_{G0}, V_{B0}) to at least one of the first operating LED circuit (e.g., LED sub-array circuit 210R) or the at least one additional LED circuit (e.g., sub-array circuits 210G and 210B).

Pet. 39–41 (citing Ex. 1004, code (57), ¶¶ 11, 13, 26, 31–44, Figs. 3–4d; Ex. 1002 ¶¶ 86–87).

For the reasons stated in the Petition at pages 38–41, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

g) *[15.f] wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit*

Petitioner contends "Bruning discloses wherein the switch (e.g., color-specific switches (Q_3, Q_4, Q_5)) is electrically connected between the DC voltage output and at least one of the first operating LED circuit (e.g., circuit 210R) or the at least one additional LED circuit (e.g., circuits 210G and 210B)," as shown below in Petitioner's annotated version of Figure 4. Pet. 42–43 (citing Ex. 1004, code (57), ¶¶ 26, 13, 31–44, Figs. 3–4a; Ex. 1002 ¶ 88).

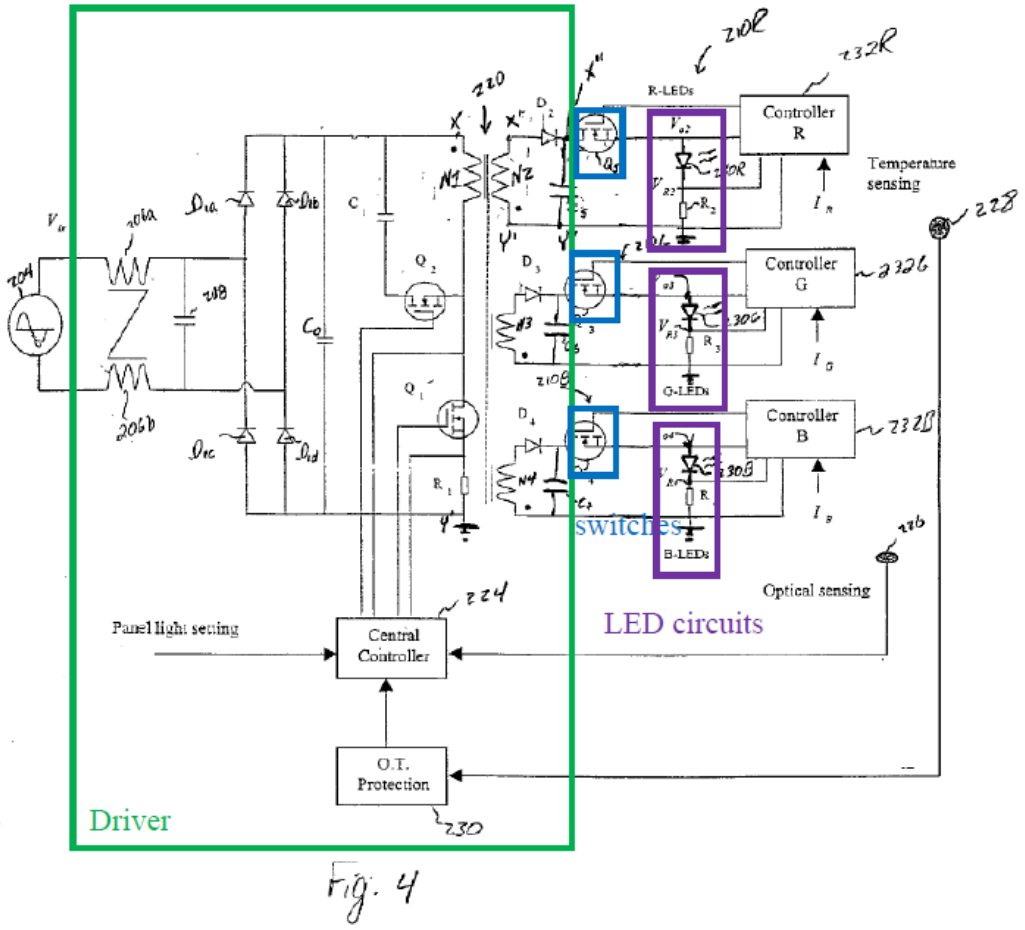


Fig. 4

The above illustration shows Figure 4 of Bruning as annotated by Petitioner. Pet. 43.

For the reasons stated in the Petition at pages 42–43, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

h) Conclusion

At this stage of the proceeding and based on the record before us, we are persuaded that Petitioner's cited evidence sufficiently supports Petitioner's contention that independent claim 15 is unpatentable as anticipated by Bruning. Accordingly, at this stage of the proceeding, we are persuaded that Petitioner has shown that it is more likely than not that independent claim 15 is anticipated by Bruning.

3. Dependent Claim 17

We do not address whether Bruning discloses the limitation recited in dependent claim 17 because we determine on this record that this limitation is indefinite under 35 U.S.C. § 112(b). *Supra* § V.D.2. As we are unable to ascertain the scope of this claim, we cannot reach the merits of Petitioner's prior art-based challenge to claim 17. *Cf. Samsung Elecs. Am., Inc. v. Prisua Eng'g Corp.*, 948 F.3d 1342, 1353 (Fed. Cir. 2020) ("[T]he proper course for the Board to follow, if it cannot ascertain the scope of a claim with reasonable certainty for purposes of assessing patentability, is to decline to institute the IPR or, if the indefiniteness issue affects only certain claims, to conclude that it could not reach a decision on the merits with

respect to whether petitioner had established the unpatentability of those claims under sections 102 or 103.").

4. Dependent Claim 19

Petitioner contends dependent claim 19, which depends directly from independent claim 15, is unpatentable as anticipated by Bruning. Pet. 44–45. The Petition provides a detailed assessment of this claim, with references to the Petition's analysis of claim 15, disclosures in Bruning, and the declaration testimony of Dr. Neikirk. Pet. 44–45. Patent Owner does not contend otherwise at this stage of the proceeding. As discussed above, we are persuaded that the cited evidence sufficiently supports Petitioner's contention that independent claim 15 is unpatentable as anticipated by Bruning. For the reasons set forth in the Petition (Pet. 44–45), we also are persuaded that the current record sufficiently supports Petitioner's challenge to dependent claim 19 as anticipated by Bruning for purposes of institution.

5. Summary

For the foregoing reasons, and the reasons stated in the Petition (Pet. 30–45), we determine that Petitioner demonstrates that it is more likely than not that claims 15 and 19 are unpatentable under 35 U.S.C. § 102 as anticipated by Bruning.

F. Obviousness of Claims 1–3, 5, 7–10, 12, 14–17, and 19 Over the Combination of Bruning and Evanicky

Petitioner contends claims 1–3, 5, 7–10, 12, 14–17, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Bruning (Ex. 1004) and Evanicky (Ex. 1013). Pet. 45–59. At this stage of the proceeding, Patent Owner does not contend that any limitation in any of

claims 1–3, 5, 7–10, 12, 14–17, and 19 is absent in the combination of Bruning and Evanicky. *See generally* Prelim. Resp. Rather, as discussed above in Sections III and IV, Patent Owner argues the '705 patent is not eligible for post-grant review and that the Board should exercise discretion to deny the Petition under § 325(d) (*see* Prelim. Resp. i–iii)—we preliminarily find both sets of arguments unpersuasive. *See supra* Sections III, IV. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on our review of the record before us, we determine that Petitioner has established that it is more likely than not that claims 1, 2, 5, 7–9, 12, 14–16, and 19[11] are unpatentable as obvious over the combination of Bruning and Evanicky, as discussed below. We turn first to an overview of Evanicky.

1. Overview of Evanicky

Evanicky is titled "Multiple Light Source Color Balancing System Within a Liquid Crystal Flat Panel Display." Ex. 1013, code (54).

Evanicky discloses that "[t]he method of altering the relative color intensities of the color points across a display screen is called white balance adjustment (also referred to as color balance adjustment, color temperature adjustment, white adjustment, or color balancing)." Ex. 1013 ¶ 6. Evanicky discloses a system for color balancing within an LCD. *Id.* at code (57), ¶¶ 2,

[11] We do not address whether Bruning discloses the limitation recited in dependent claims 3, 10, and 17 because we determine at this stage that this limitation is indefinite under 35 U.S.C. § 112(b). *See* Sections V.D.2, E.3.

12 ("mechanism and method that dynamically alters the color balance of a display and is particularly well suited for application with flat panel LCD units"), 13, 52, 149. Evanicky's color balancing system can "operate for both edge and backlighting systems." *Id.* ¶ 13.

We further discuss below the disclosure of Evanicky in connection with Petitioner's arguments.

2. Rationale for Combining Bruning and Evanicky

Petitioner contends "Bruning discloses that the 'color temperature (color point) for the backlight' can be varied by adjusting the 'light output of the [red, blue, and green] sub-arrays of the LED backlight'" (Pet. 47 (citing Ex. 1004 ¶ 47) (alteration in original)), and that the skilled artisan "would have been motivated to modify Bruning's backlight such that a user could adjust the color temperature or color point of the backlight, based on the express teachings of Evanicky" (Pet. 47). In particular, Petitioner argues that the skilled artisan "would have been motivated to modify Bruning to provide user selection of Bruning's color-specific switches (Q3, Q4, and Q5) that control the light output of their respective colored circuits." Pet. 47 (citing Ex. 1002 ¶ 98).

Petitioner contends "Evanicky discloses a knob or slider switch to enable the user to adjust the color temperature or color balance of the display." Pet. 48 (citing Ex. 1004, code (57), ¶¶ 12, 57 (color temperature adjustment knob 2b), 103 ("mechanisms in which the user can adjust the color balance of the display"), 75, 104, Fig. 1B). Evanicky discloses that "the user can adjust a slider between two extreme mechanical positions in which the position of the slider (or knob 2b) represents a particular color

temperature within the predetermined color temperature range." Ex. 1004 ¶ 103. Petitioner argues the skilled artisan "would have recognized Evanicky's teaching regarding the importance of giving a user the ability to adjust the display's color temperature to be readily applicable to Bruning, especially in light of the disclosed systems' similarities." Pet. 49 (citing Ex. 1002 ¶ 100); *see id.* at 49–51 (discussing similarities between Bruning and Evanicky). Petitioner argues "Bruning expressly contemplates selection of the backlight's color temperature or color point, but falls short of *expressly* disclosing a switch that the user physically moves in order to adjust the color temperature or color point of the backlight," and thus, that it would have been obvious to the skilled artisan "to modify Bruning to allow a user to adjust the color balance or color temperature of the display, in light of Evanicky." Pet. 51 (citing Ex. 1004 ¶¶ 15, 47; Ex. 1002 ¶ 104).

Petitioner also contends:

> [The skilled artisan] would have found that Bruning and Evanicky's teachings could have been predictably combined at least because of lighting art's predictability and the various elements' known interchangeability. Additionally, [the skilled artisan] would have had a reasonable expectation of success in combining Bruning and Evanicky at least because the references use known variations of existing technology (physical switches like knobs and slider switches as user interfaces) to solve routine and well understood problems (adjust settings of a laptop's display, such as color balance) in predictable ways.

Pet. 51–52 (citing Ex. 1004 ¶ 38, Fig. 4; Ex. 1002 ¶ 105); *see id.* at 52 ("[T]he combination would have been predictable matter of simply programming and well within the skill of [the ordinarily skilled artisan].").

At this stage of the proceeding, Patent Owner does not dispute Petitioner's rationale(s) to combine Bruning and Evanicky, and does not dispute that the skilled artisan would have had a reasonable expectation of success in doing so. *See generally* Prelim. Resp.

For the reasons stated in the Petition at pages 47–52, and based on the record before us, we are persuaded that Petitioner's cited evidence provides sufficient rational reasons for purposes of institution to combine Bruning and Evanicky with a reasonable expectation of success in doing so.

3. Independent Claim 1

Petitioner provides an element-by-element analysis of independent claim 1 in relation to the combination of Bruning and Evanicky. Pet. 45–54. Petitioner's analysis relies on testimony from its technical expert, Dr. Neikirk. Ex. 1002 ¶¶ 94–117.

a) [1.pre] An LED lighting system comprising:

Petitioner contends Bruning discloses this preamble for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.pre of claim 15. Pet. 52; *see supra* Section V.E.2.a. We agree, and find Petitioner sufficiently establishes that Bruning discloses the preamble of claim 1. Patent Owner does not contend otherwise at this stage of the proceeding.

b) [1.a] a first operating LED circuit and at least one additional LED circuit

Petitioner contends Bruning discloses this limitation for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.a of claim 15. Pet. 52; *see supra* Section V.E.2.b. We agree, and find

Petitioner sufficiently establishes that Bruning discloses limitation 1.a. Patent Owner does not contend otherwise at this stage of the proceeding.

c) [1.b] at least one of the first operating LED circuit or the at least one additional LED circuit including at least two LEDs connected in either series or parallel

Petitioner contends:

> Bruning discloses at least one of the first operating LED circuit (LED subarray circuit 210R) or the at least one additional LED circuit (e.g., LED sub-array circuits 210G and 210B) including at least two LEDs connected in either series or parallel ("One LED 230R is used in FIG. 4b to represent all of the LEDs in the sub-array 210R.").

Pet. 52 (citing Ex. 1004 ¶¶ 24, 25, 31–44; Ex. 1002 ¶ 108). Petitioner argues "Bruning discloses that each of the sub-arrays includes at least two LEDs connected in either series or parallel, and preferably includes redundant connections to minimize the impact of a failure or short of an LED." Pet. 52–53 (citing Ex. 1004 ¶¶ 24, 25, 40; Ex. 1002 ¶ 109).

For the reasons stated in the Petition at pages 52–53, and based on the record before us, we find Petitioner sufficiently establishes that Bruning discloses limitation 1.b. Patent Owner does not contend otherwise at this stage of the proceeding.

d) [1.c] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit

Petitioner contends Bruning discloses this limitation for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.b of claim 15. Pet. 53; *see supra* Section V.E.2.c. We agree, and find

Petitioner sufficiently establishes that Bruning discloses limitation 1.c. Patent Owner does not contend otherwise at this stage of the proceeding.

e) *[1.d] a switch capable of at least one of: (a) switching a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit, or (b) switching the at least one additional LED circuit on or off*

Petitioner contends Bruning discloses this limitation for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.c of claim 15. Pet. 53; *see supra* Section V.E.2.d. Petitioner adds, "[i]n the combination, the color-specific switches of Bruning are the switch," or "[a]lternatively, the combination of the color-specific switches of Bruning, the controllers, and the slider/knob of Evanicky together are the switch." Pet. 53 (citing Ex. 1002 ¶ 112). We agree, and find Petitioner sufficiently establishes that at least the combination of Bruning and Evanicky teaches limitation 1.d. Patent Owner does not contend otherwise at this stage of the proceeding.

f) *[1.e] wherein (a) or (b) is selectable by a user switching the switch*

Petitioner contends "Evanicky discloses the backlight's color point or color temperature is selectable by a user switching a switch," and argues it would have been obvious to the skilled artisan "to modify Bruning's controllers to allow user selection (e.g., via a slider or knob) as taught by Evanicky." Pet. 53–54 (citing, *inter alia*, Ex. 1013 ¶¶ 6, 8, 12, 57, 103, 104, Fig. 1B; Ex. 1002 ¶ 114). Petitioner argues that, in the combination, "the color-specific switches of Bruning are the switch, and they are indirectly

selectable by the user via the knob/slider of Evenicky and the controllers," and argues in the alternative that "the combination of the color-specific switches of Bruning, the controllers, and the slider/knob of Evanicky together are the switch, which is directly selected by the user." Pet. 54 (citing Ex. 1002 ¶ 115).

For the reasons stated in the Petition at pages 53–54, and based on the record before us, we find Petitioner sufficiently establishes that at least the combination of Bruning and Evanicky teaches limitation 1.e. Patent Owner does not contend otherwise at this stage of the proceeding.

> g) *[1.f] an LED driver including an input configured to connect to an AC voltage power source, the LED driver configured to provide a DC voltage output to at least one of the first operating LED circuit or the at least one additional LED circuit*

Petitioner contends Bruning discloses this limitation for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.e of claim 15. Pet. 54; *see supra* Section V.E.2.f. We agree, and find Petitioner sufficiently establishes that Bruning discloses limitation 1.f. Patent Owner does not contend otherwise at this stage of the proceeding.

> h) *[1.g] wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit*

Petitioner contends Bruning discloses this limitation for the same reasons that Petitioner provided for why Bruning anticipates limitation 15.f of claim 15. Pet. 54; *see supra* Section V.E.2.g. We agree, and find

Petitioner sufficiently establishes that Bruning discloses limitation 1.g. Patent Owner does not contend otherwise at this stage of the proceeding.

i) Conclusion

At this stage of the proceeding and based on the record before us, we are persuaded that Petitioner's cited evidence provides sufficient rational reasons for purposes of institution to combine Bruning and Evanicky with a reasonable expectation of success, and sufficiently supports Petitioner's contention that independent claim 1 is unpatentable as obvious over the combination of Bruning and Evanicky.

4. Dependent Claims 3, 10, and 17

We do not address whether the combination of Bruning and Evanicky teaches the limitation recited in dependent claims 3, 10, and 17 because we determine on this record that this limitation is indefinite under 35 U.S.C. § 112(b). *Supra* § V.D.2; *see supra* § V.E.3 (citing *Samsung Elecs.*, 948 F.3d at 1353).

5. Independent Claims 8 and 15 and Dependent Claims 2, 5, 7, 9, 12, 14, 16, and 19

Petitioner contends claims 2, 5, 7–9, 12, 14–16, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Bruning and Evanicky. Pet. 54–59. Claims 8 and 15 are independent claims reciting structure commensurate in scope with structure recited in independent claim 1, and claims 2, 5, 7, 9, 12, 14, 16, and 19 depend directly from independent claims 1, 8, or 15. The Petition provides a detailed assessment of these claims, with references to the Petition's analysis of claim 1, disclosures in Bruning and Evanicky, and the declaration testimony

of Dr. Neikirk. Pet. 54–59. Patent Owner does not contend otherwise at this stage of the proceeding. As discussed above, we are persuaded that the cited evidence sufficiently supports Petitioner's contention that independent claim 1 is unpatentable as obvious over the combination of Bruning and Evanicky. For the reasons set forth in the Petition (Pet. 54–59), we also are persuaded that the current record sufficiently supports Petitioner's challenge to independent claims 8 and 15 and dependent claims 2, 5, 7, 9, 12, 14, 16, and 19 as obvious over the combination of Bruning and Evanicky for purposes of institution.

6. Summary

For the foregoing reasons, and the reasons stated in the Petition (Pet. 45–59), we determine that Petitioner demonstrates that it is more likely than not that claims 1, 2, 5, 7–9, 12, 14–16, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Bruning and Evanicky.

G. (1) Anticipation of Claims 1–2, 5, 7–9, 12, 14–16, and 19 by Doheny; (2) Obviousness of Claims 1–2, 5, 7–9, 12, 14–16, and 19 Over Van Winkle; and (3) Obviousness of Claims 1–3, 5, 7–10, 12, 14–17, and 19 Over the Combination of Bruning and Lee

Petitioner additionally contends (1) claims 1–2, 5, 7–9, 12, 14–16, and 19 are unpatentable under 35 U.S.C. § 102 as anticipated by Doheny (Ex. 1011) (Pet. 59–75); (2) claims 1–2, 5, 7–9, 12, 14–16, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over Van Winkle (Ex. 1012) (Pet. 76–96); and (3) claims 1–3, 5, 7–10, 12, 14–17, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Bruning (Ex. 1004) and Lee (Ex. 1031) (Pet. 96–107). Patent Owner does

not contend otherwise at this stage of the proceeding. *See generally* Prelim. Resp. Because we determine that Petitioner demonstrates that it is more likely than not that (1) claims 1, 2, 5, 7–9, 12, 14–16, and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Bruning and Evanicky (*see supra* § V.F), (2) claims 15 and 19 are unpatentable under 35 U.S.C. § 102 as anticipated by Bruning (*see supra* § V.E), and (3) claims 3, 10, and 17 are unpatentable under 35 U.S.C. § 112 (*see supra* § V.D), such that we institute this proceeding, and because we must therefore institute post grant review on all claims and all challenges in the Petition (*see* 37 C.F.R. § 42.208(a)), for purposes of institution, we need not and do not herein address in detail Petitioner's foregoing challenges to the noted claims. However, we do provide below certain guidance on these challenges to assist the parties in the upcoming trial.

We have reviewed Petitioner's additional contentions (1) through (3) above (*see* Pet. 59–107), and based on the record before us, preliminarily find each of them persuasive. The Petition provides a detailed assessment of the challenged claims, with references to disclosures in Doheny, Van Winkle, Bruning, and Lee and the declaration testimony of Dr. Neikirk. Pet. 59–107. At this stage of the proceeding and based on the record before us, we preliminarily are persuaded that the cited evidence sufficiently supports Petitioner's contentions (1) through (3) for purposes of institution.

VI. CONCLUSION

Based on the evidence before us, we determine that Petitioner has established that it is more likely than not that claims 1–3, 5, 7–10, 12, 14–17,

and 19 of the '705 patent are unpatentable. Accordingly, we institute trial on all the challenges in the Petition.

At this stage of the proceeding, the Board has not made a final determination on the construction of any claim term or the patentability of any challenged claim.

VII. ORDER

Upon consideration of the record before us, it is:

ORDERED that, pursuant to 35 U.S.C. § 324, a post-grant review of claims 1–3, 5, 7–10, 12, 14–17, and 19 of the '705 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324 and 37 C.F.R. § 42.4(b), post-grant review of the '705 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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