UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HOME DEPOT USA, INC.,
Petitioner,

v.

LYNK LABS, INC.,
Patent Owner.

_____

Case PGR2023-00016
U.S. Patent No. 11,297,705

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PATENT OWNER'S PRELIMINARY RESPONSE

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2001	Pat. Pub. No. US2020/0260554 for Appl. No. 16/740,295 ('295 Application)
2002	Applicant's June 13, 2019 response to Office Action dated April 25, 2019 (U.S. Pat. App. No. 16/274,164)
2003	Applicant's June 13, 2019 amendments to specification in response to Office Action dated April 25, 2019 (U.S. Pat. App. No. 16/274,164)
2004	Applicant's July 5, 2019 response to Office Action dated June 27, 2019 (U.S. Pat. App. No. 16/274,164)
2005	Applicant's July 5, 2019 amendments to specification in response to Office Action dated June 27, 2019 (U.S. Pat. App. No. 16/274,164)
2006	April 27, 2021 Non-Final Rejection (U.S. Pat. App. No. 17/181,802)
2007	Pat. App. Pub. No. US2003/0179585 ("Lefebvre")
2008	Pat. App. Pub. No. US2004/0201988 ("Allen")
2009	Applicant's June 22, 2021 response to Office Action dated April 27, 2021 (U.S. Pat. App. No. 17/181,802)
2010	July 15, 2021 Notice of Allowance (U.S. Pat. App. No. 17/181,802)
2011	March 11, 2022 Notice of Allowance (U.S. Pat. App. No. 17/181,802)
2012	January 12, 2021 Notice of Allowance (U.S. Pat. App. No. 16/740,295)
2013	U.S. Pat. No. 7,748,877 ("Colby")

2014	Pat. App. Pub. No. US2008/0130288 (“Catalano”)
2015	Pat. App. Pub. No. US2007/0115248 (“Roberts”)
2016	April 25, 2019 Non-Final Rejection (U.S. Pat. App. No. 16/274,164)
2017	June 27, 2019 Final Office Action (U.S. Pat. App. No. 16/274,164)
2018	Datasheet for Everlight Power LED 34-01/R5C-AQSC (Jan. 16., 2006)
2019	August 12, 2019 Non-Final Rejection (U.S. Pat. App. No. 16/274,164)
2020	September 12, 2019 Response to Office Action dated August 12, 2019 (U.S. Pat. App. No. 16/274,164)
2021	October 2, 2019 Notice of Allowance (U.S. Pat. App. No. 16/274,164)
2022	January 11, 2018 Non-Final Rejection (U.S. Pat. App. No. 15/685,429)
2023	Pat. App. Pub. No. US2008/0203936 (“Mariyama”)
2024	July 10, 2018 Response to Office Action (U.S. Pat. App. No. 15/685,429)
2025	November 19, 2018 Final Rejection (U.S. Pat. App. No. 15/685,429)
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2034	September 16, 2013 Response to Office Action (U.S. Pat. App. No. 13/322,796)
2035	September 25, 2013 Notice of Allowance (U.S. Pat. App. No. 13/322,796)
2036	Datasheet for Samsung High Power LED LH502C, Rev. 2.2, May 4, 2022. ("Samsung Datasheet")
2037	Datasheet for Cree CxxxMB290-S0100 series LEDs, 2003. ("Cree Datasheet")
2038	*Printout from* https://www.baldengineer.com/led-basics.html (last accessed August 12, 2022). ("Bald Engineer")
2039	December 7, 2021 Information Disclosure Statement (U.S. Pat. App. No. 17/181,802)
2040	December 18, 2021 Information Disclosure Statement (signed) (U.S. Pat. App. No. 17/181,802)
2041	December 22, 2021 Notice of Allowance (U.S. Pat. App. No. 17/181,802)
2042	Datasheet for Lite-On LTS-6460G LED display (January 19, 2005)
2043	U.S. Pat. No. 8,648,539 ("'539 Patent")
2044	U.S. Pat. No. 8,179,055 ("'055 Patent")

I. INTRODUCTION

U.S. Patent No. 11,297,705 (the "'705 Patent") is directed towards a multi-voltage and multi-brightness LED lighting devices and methods of using same. Ex. 1001 ['705 Patent], Title. Petitioner Home Depot USA, Inc. ("Home Depot" or "Petitioner") has petitioned for review on six grounds of alleged unpatentability against claims 1-3, 5, 7-10, 12, 14-17 and 19 of the '705 Patent.

The Petition's arguments fail for a number of reasons. First, the '705 Patent is not eligible for PGR because its claims are entitled to priority before March 16, 2013. Petitioner's arguments start from the premise that the claims lack written description support and then work backwards, repeatedly taking single statements from the intrinsic record out of context to propose new constructions that are contrary to the express language of the claims and the plain and ordinary meaning of the terms. Additionally, Petitioner incorrectly argues that the claims require the exact same wording in the specification to satisfy the written description requirement. Petitioner further argues that different aspects of the invention, which are disclosed as being combinable with each other, cannot in fact be combined to show written description. In each case, Petitioner's arguments are detached from the disclosure of the '705 Patent and its priority documents.

While Petitioner references the Board's decision to institute review of a different patent in PGR2022-00009 in support of its arguments, the Petition and

this Preliminary Response present new arguments and evidence that were not considered as part of that decision. Thus, the prior decision is not particularly relevant here. As demonstrated below, Petitioner identifies no claims that have an effective filing date on or after March 16, 2013.

Second, the Board should decline to institute under 35 U.S.C. § 325(d) because the primary reference in three grounds (Bruning) was reviewed and considered during prosecution and in related proceedings before the Board. Further, the issues and art presented in every ground (including Bruning) are duplicative and cumulative of the issues raised during prosecution. The prosecution for the '705 Patent and its ancestor applications was detailed and thorough, considering hundreds of patents and publications and issuing numerous rejections over prior art references that are cumulative of the references presented in this Petition.

Third, grounds 4 and 5 are based on the Doheny and Van Winkle references. These references (filed in 2017 and 2018) are not prior art to any of the challenged claims because the challenged claims properly claim priority back at least to 2010. Thus, grounds 4 and 5 fail and there is no reason to consider Doheny and Van Winkle with respect to 35 U.S.C. §325(d).

Finally, ground 1 fails because claims 3, 10 and 17 are not impossible. Thus, grounds 1, 4 and 5 fail and therefore weigh against institution both on the merits and under 35 U.S.C. § 325(d).

For the reasons set forth below, the '705 Patent is ineligible for post-grant review and the Petition fails to demonstrate a reasonable likelihood that any of challenged claims 1-3, 5, 7-10, 12, 14-17, and 19 of the '705 Patent are unpatentable.

II. OVERVIEW OF THE '705 PATENT, PROSECUTION HISTORY, AND THE STATE OF THE ART

A. Technical Background

The general field of the '705 Patent is LED lighting, and in particular, "multi-voltage and multi-brightness LED lighting devices and methods of using same." Ex. 1001 ['705 Patent], Title, Abstract. The '705 Patent "includes a [user-selectable] switch capable of at least one of switching a voltage level input to at least one of the first LED circuit or the second LED circuit , or switching the second LED circuit 'on' or 'off'" by the user switching the switch. Ex. 1001 ['705 Patent], Abstract. The LED lighting system also includes an LED driver connected to an AC voltage power source with a DC voltage output connected to one or more LED circuits. *Id.* The switch is electrically connected between the DC voltage

output of the driver and at least one of the first operating LED circuit or the at least one additional LED circuit.

B. Challenged Claims

The Petition challenges claims 1-3, 5, 7-10, 12, 14-17, and 19 of the '705 Patent. Claims 1, 8, and 15 are independent and directed to LED lighting systems. The remainder of the claims depend from independent claims 1, 8, and 15. The independent claims are directed to LED lighting devices comprising at least two LED circuits configured to emit different color lights, where the LED lighting device contains a (user-selectable) switch that may select between switching voltage level inputs to the LED circuits or switching the LED circuits on or off and an LED driver connected between an AC voltage power source and a DC voltage output. The switch is electrically connected between the LED driver and the LED circuits.

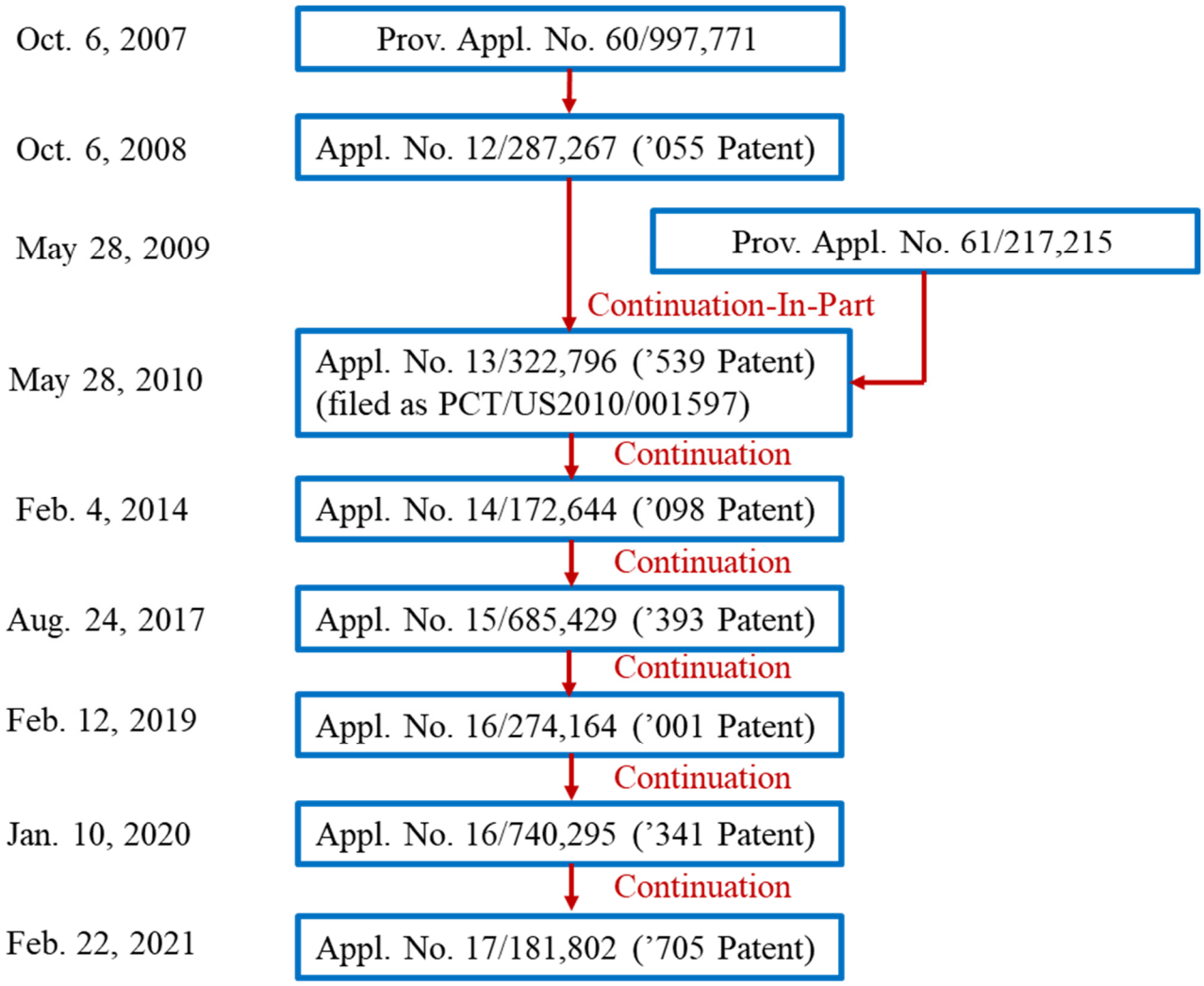
The challenged dependent claims recite further improvements on these concepts, including using at least two different DC forward voltages to the LED circuits, using switches to change the light output of the LED circuit, and using at least two different AC voltage power sources.

Claims 4, 6, 11, 13, 18 and 20 of the '705 Patent are not challenged by any ground and are therefore not subject to this PGR.

C. Prosecution History

1. Priority Chain

The '705 Patent was filed on February 22, 2021 as U.S. Pat. Appl. No. 17/181,802 and issued on April 5, 2022. Ex. 1001 ['705 Patent]. It has a chain of priority dating back through several continuation applications and one continuation-in-part application to provisional applications No. 61/217,215, filed on May 28, 2009, and 60/997,771, filed on Oct. 6, 2007. *Id.*, 1:5-24. Each of these applications (and the corresponding patents) is also incorporated by reference into the '705 Patent. *Id.*, 21-23 ("the contents of each of these applications are expressly incorporated herein by reference."). *Paice LLC, The Abell Foundation, Inc. v. Ford Motor Company*, 881 F.3d 894, 907 (Fed. Cir. 2018) (the language "which is incorporated herein by this reference" "is plainly sufficient to incorporate [a prior art patent] in its entirety"); *Harari v. Lee*, 656 F.3d 1331, 1335 (Fed. Cir. 2011) (holding the statement "[t]he disclosures of the two [prior] applications are hereby incorporate[d] by reference" "incorporates the entire disclosures of the two applications"). A chart summarizing the priority chain is shown below.



The '705 Patent traces its priority back through continuation applications to the Pre-AIA '597 PCT, filed on May 28, 2010. Ex. 1001 ['705 Patent], 1:5-24. Each of these continuation applications in turn incorporates by reference every prior patent and application in the chain. Ex. 1009 ['429 Application], ¶[0001]; Ex. 1010 ['644 Application], ¶[0001]; Ex. 1016 ['796 Application], ¶[0001]; Ex. 1017 ['267 Application], ¶[0001]; Ex. 1018 ['597 PCT], [Para 1]; Ex. 1019 ['164 Application], ¶[0001]; Ex. 2001 ['295 Application], [Para 1]. Thus, there is

complete continuity of disclosure between each application in the chain dating back to the ’597 PCT, filed on May 28, 2010.

While the specification of the grandparent ’164 Application was amended on July 5, 2019 to include several paragraphs from the ’215 Provisional Application (Exs. 2002 [‘001 Patent 6-13-2019 Response], 8-9; 2003 [‘001 Patent 6-13-2019 Amendments To Specification], 10-11; 2004 [‘001 Patent 7-5-2019 Remarks], 7-8; 2005 [‘001 Patent 7-5-2019 Amendments To Specification]), those amendments simply copied paragraphs already present in the ’215 Provisional (and expressly incorporated by reference into the ’164 Application) into the body of the ’164 Application specification. *Id.* Ex. 1001 [’705 Patent], 1:5-23. The amendments therefore added nothing that was not already incorporated by reference into the ’705 Patent and each of its ancestor applications back to at least the ’597 PCT.

2. Prosecution of The ’802 Application

The ’705 Patent underwent rigorous examination. On April 27, 2021, the examiner issued a non-final Office action rejecting as-filed claims 1-20 as unpatentable over Lefebvre (US2003/0179585) in view of Allen (US2004/0201988). Exs. 2006, [4-27-2021 Rejection]; 2007 [Lefebvre]; 2008 [Allen]. On June 22, 2021, Applicant responded, amending claims 6, 13, and 20, and arguing that “even if Lefebvre’s circuits of Figs. 4 and 5 were combined, the switches would be placed before the bridge rectifiers” while “the switches of

Claim 1 instead are located after a DC voltage output (of an LED driver), which provides for control of a DC voltage rather than attempting to control an AC voltage that is later converted into a DC voltage." Ex. 2009, [6-22-2021 Response], 6-7. Thus, Applicant distinguished Lefebvre because its switches were controlling the AC voltage input to an LED driver rather than the DC voltage output.

On July 15, 2021, the examiner withdrew the rejection over Lefebvre and issued a notice of allowance on the basis that "claims 1, 8, and 15 require that 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. 2010, [7-15-2021 Notice of Allowance].

After the first notice of allowance, but before issuance, Applicant promptly submitted several Information Disclosure Statements with recent materials from the district court litigation and related IPRs (including Home Depot's preliminary invalidity contentions and the Petition and supporting materials from PGR2022-00009 involving the parent '341 Patent). After reviewing and considering these additional Information Disclosure Statements, the examiner issued another notice of allowance on March 11, 2022 and the '705 Patent subsequently issued. Ex. 2011 [3-11-2022 Notice of Allowance].

3. Prosecution of The Ancestor Applications

The ancestor continuation applications of the ’705 Patent were also thoroughly examined going back to 2010. While the ’295 Application issued as the ’341 Patent following the applicant’s filing of a terminal disclaimer over the parent ’001 Patent (Ex. 2012, [01-12-2021 Notice of Allowance]), the other applications sharing the same specification and similar claims to the ’705 Patent were subject to a number of rejections over prior art analogous to the prior art asserted in the Petition, such as Colby (US Pat. No. 7,748,877), Catalano (US2008/0130288) and Roberts (US2007/0115248) (Exs. 2013, 2014 and 2015, respectively.) Each of these references was cited by the examiner during prosecution of the ’705 Patent. *See, e.g.,* Ex. 1001 [’705 Patent], page 3.

The claims of the ’164 Application (which issued as the ’001 Patent) were rejected on April 25, 2019 as anticipated by Colby. Ex. 2016, [04/25/2019 Non-Final Rejection]. On June 13, 2019, applicant amended the claims to include the limitation “wherein the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V.” Ex. 2002, [6-13-2019 Response], 3. Applicant distinguished over Colby on the basis that “the recited forward voltage is different from the AC voltage provided by a typical wall outlet.” *Id.*, 9. Notwithstanding applicant’s arguments, on June 27, 2019, the examiner issued a

final rejection rejecting most of the claims as lacking written description. Ex. 2006 [6-27-2019 Final Rejection], 2. In its July 5, 2019 Response After Final, applicant amended the specification to add several paragraphs from the '215 Provisional (which was incorporated by reference) to clarify where the written description support for the claims was located. Ex. 2006, [7-5-2019 Response After Final], 7.

Notwithstanding applicant's amendments to the claims and specification, on August 12, 2019, the examiner issued a further non-final rejection. Ex. 2019, [8-12-2019 Non-Final Rejection]. In it, the examiner rejected the claims as anticipated by Catalano (US2008/0130288). *Id.*, 2-8. On September 12, 2019, the applicant traversed the rejections, arguing that Catalano (incorrectly referred to as "Catalone" in the response) fails to disclose the limitations "wherein the driver has an output voltage lower than the AC mains power source and a frequency higher than the AC mains power source" and "wherein the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V or greater." Ex. 2020, [9/12/2019 response], 6. With respect to the latter, applicant argued as follows:

> *Second*, Catalone fails to disclose that a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater, as required by claim 1. The Office Action cites to paragraphs 5, 15, 56, 65, and 66 of Catalone as allegedly disclosing this feature. But Applicant respectfully submits that none of these paragraphs disclose a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater.
>
> - Paragraph 5 of Catalone is directed to the operating voltages of legacy halogen bulbs, not LEDs.
> - Paragraph 15 of Catalone discusses techniques for dimming LEDs and other non-incandescent lighting.
> - Paragraph 56 of Catalone generally describes power conditioning circuitry and rectifying AC power to DC power to suit a desired voltage.
> - Paragraph 65 of Catalone discusses the differences between mains voltage power supplies and battery power supplies
> - Paragraph 66 of Catalone describes a technique for controlling the current to two LEDs with no description of the forward voltage of the two LEDs.
>
> These cited portions of Catalone never disclose LED circuits having forward voltages of 6V or greater. Accordingly, Catalone fails to disclose that a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater.

Id., 7-8. Thus, Applicant pointed out that the Catalano reference did not discuss LED circuits having forward voltages of 6V or greater.

On October 2, 2019, the examiner allowed the claims, recognizing that the limitation "wherein the first operating LED circuit and the at least one additional LED circuit have a forward voltage of 6V or greater" was not taught by the prior art of record. Ex. 2021, [10-2-2019 Notice of Allowance].

Similarly, the ’429 Application (which issued as the ’393 Patent) was subject to thorough examination. On January 11, 2018, the examiner issued a non-final rejection rejecting claims 1, 2 and 7-15 as anticipated by Roberts (US2007/0115248) and claims 3-6 as being obvious over Roberts in view of Mariyama (US2008/0203936). Ex. 2022 [January 11, 2018 Non-Final Rejection], 2-4, Ex. 2023 [Mariyama]. On July 10, 2018, the applicant responded by amending the claims to include, among other things, the limitation “a switch that is selectable by a user and capable of independently connecting an AC voltage power source to or disconnecting the AC voltage power source from each of the first LED circuit and the second LED circuit.” Ex. 2024 [July 10, 2018 Response], 7. On November 19, 2018, the examiner issued a final rejection, rejecting claims 1-11, 14 and 15 as being anticipated by Miskin (US2007/0273299). Ex. 2025 [November 19, 2018 Final Rejection], 2-6. On December 19, 2018, applicant filed a Response After Final, amending the independent claims to include independent claim 13, which had previously been objected to as allowable if rewritten in independent form. Ex. 2026 [December 19, 2018 Response After Final], 2-7. Claim 13 recited “wherein the switch is connected to each of the first LED circuit and the second LED circuit such that each of the first LED circuit and the second LED circuit is independently controlled by the switch.” *Id.* On this basis, the examiner issued a notice of allowance. Ex. 2027 [February 01, 2019 Notice of Allowance], 2.

The ’644 Application (which issued as the ’098 Patent) was filed on February 4, 2014. On October 8, 2015, the examiner issued a non-final rejection alleging anticipation by Miskin (US2007/0273299). Ex. 2028 [October 8, 2015 Non-Final Rejection], 2. On April 8, 2016, the applicant traversed the rejection, arguing that “[t]here is no ability to selectively modify the devices shown in Figs. 15 and 16 in *Miskin* to achieve a different voltage or brightness level using only a single package as each device has only electrically connected circuits and only have electrically connected devices.” Ex. 2029 [April 8, 2016 Response]. On July 29, 2016, the examiner issued a second non-final rejection withdrawing the previous rejection, rejecting claims 1, 2, 7-13 and 21-25 as anticipated by Roberts (US2007/0115248), rejecting claims 3-6, 19 and 26-28 as unpatentable over Roberts in view of Mariyama (US2008/0203936) and objecting to claims 14-18 and 20 as dependent upon a rejected base claim but allowable if rewritten in independent form. Ex. 2030 [July 29, 2016 Non-Final Rejection]. In response, on January 26, 2017, applicant amended rejected claim 13 to include the elements of claim 14 and added new claim 29 which combined claims 13 and 20. Ex. 2031 [January 26, 2017 Response]. On April 21, 2017, the examiner issued a notice of allowance. Ex. 2032 [April 21, 2017 Notice of Allowance].

The ’796 Application (which issued as the ’539 Patent) was filed on May 28, 2010 as PCT/US2010/001597. On May 16, 2013, the examiner issued a non-final rejection rejecting the claims as being anticipated by Miskin (US2007/0273299). Ex. 2033 [May 16, 2013 Non-Final Rejection], 2. On September 16, 2013, applicant responded, amending the claims and arguing that “*Miskin* as cited fails to disclose a lighting device having at least two LED circuits that are electrically unconnected to each other in a parallel relationship.” Ex. 2034 [September 16, 2013 Response]. On September 25, 2013, the examiner issued a notice of allowance. Ex. 2035 [September 25, 2013 Notice of Allowance]. Thus, the prosecution histories of the ’705 Patent and its ancestors demonstrate extensive examination of prior art that is duplicative of the prior art asserted in this PGR.

D. Level of Ordinary Skill

The Petition and Petitioner’s expert (Dr. Neikirk) have asserted that a person of ordinary skill in the art at the time of the ’705 Patent’s effective filing date of October 6, 2007 “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.” Pet., 23.

As discussed above, the ’705 Patent is directed toward LED lighting systems. *See* §II.A. 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.***" *See, e.g.,* Ex. 1001 ['705 Patent], Abstract, 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' …"). Indeed, as seen in '705 Patent Figs. 1-12, the disclosure is directed to systems and devices such as LED packages and lamps.

III. CLAIM CONSTRUCTION

The claims should be construed starting with the ordinary and customary meaning as understood by the person of ordinary skill in the art (POSITA) and considering the intrinsic evidence consisting of (1) the claim language, (2) the specification, and (3) the prosecution history. *David Netzer Consulting Eng'r LLC v. Shell Oil Co.*, 824 F.3d 989, 993-94 (Fed. Cir. 2016); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-15 (Fed. Cir. 2005).

Often, the specification is dispositive; it is the single best guide to the meaning of the disputed claim term and provides a "concordance for the claims." *Wright Medical Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1443 (Fed. Cir. 1997); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005). The

specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication. *Phillips*, 415 F.3d at 1321.

Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent. *Phillips,* 415 F.3d at 1317. However, the prosecution history "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.*

Finally, extrinsic evidence may also be considered to "help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean." *Id.* at 1319.

A. Forward Voltage

1. Proper construction for "forward voltage"

The term "forward voltage" in the '705 Patent should be construed as the operating voltage for the claimed LED circuit.

The term "forward voltage" is present in dependent claims 3, 10, and 17. Ex. 1001 ['705 Patent], claims 3, 10 and 17. Each of these claims is substantially similar. Claim 3 is representative and is reproduced below:

> 3. The LED lighting system of claim 1, 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.

Id.

Per the express language of claim 3, a forward voltage is the voltage "provide[d]" to the claimed "operating LED circuit." Ex. 1001 ['705 Patent], claim 3. This is essentially Patent Owner's construction. Patent Owner's 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.

The claims also require "forward voltage" to be a range of voltages. Ex. 1001 ['705 Patent], claims 1 ("switching a voltage level input" to the operating LED circuit), 3 ("the switching of the switch provides at least two different DC forward voltages."). Consistent with PO's construction, the "operating voltage" can be a range of voltages.

The specification supports Patent Owner's construction. *Phillips,* 415 F.3d at 1315 ("the specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'") (internal citation and quotation omitted). The title of the '705 Patent is "multi-voltage and multi-brightness LED lighting devices and methods of using same." Ex. 1001, ['705 Patent], Title. The specification repeatedly indicates the forward voltages are determined based on the desired operating voltage. 1:41-43 ("The present invention generally relates to light emitting diodes ('LEDs') for

multi-voltage and/or multi-brightness level operation."), 1:65-2:6 ("Therefore, it would be advantageous to have a single chip LED or multi-chip single LED packages that could be easily configured to operate at multiple voltages…"). 3:15-18 ("This invention comprises circuits and devices that can be driven with more than one AC or DC forward voltage 'multi-voltage' [ ] based on a selectable desired operating voltage."). Thus, the '705 Patent comprises multiple voltages to LED lighting devices to change the brightness of the LED circuit.

Likewise, the specification continually discusses the fact that the forward voltage "drives" the LED circuit. *See, e.g.,* Ex. 1001 ['705 Patent], 3:15-17 ("This invention comprises circuits and devices that can be driven with more than one AC or DC forward voltage 'multi-voltage' at 6V or greater … ."); 4:9-11 ("each single voltage AC LED circuit is designed to be driven with a predetermined forward voltage…"); 4:42-44 ("each multi-voltage AC or DC LED device would be able to be driven with at least two different AC or DC forward voltages…"); 5:47-54 (referencing a first and second "forward voltage drive level."). The term "drives" underscores that the forward voltage must be in the range sufficient to operate the LED circuit—that is, to turn on the LED circuit at the desired light intensity. If the forward voltage was not within the operating range, it would not drive the LED circuit.

Accordingly, the term "forward voltage" in the '705 Patent should be construed as the operating voltage for the claimed LED circuit.

2. Petitioner's constructions are incorrect

As discussed above, Petitioner argues for a construction of "forward voltage" to mean either "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) or, alternatively, as "'a voltage in a diode's forward direction.'". Pet., 25. Both constructions are incorrect.

a. Petitioner's first construction is incorrect

Petitioner's first proposed construction 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." Pet., 24. Petitioner bootstraps this proposed construction to further argue that it means the forward voltage in claims 3, 10, and 17 must be a single, predetermined voltage. Pet. 28-30. This is incorrect.

i. Petitioner's construction directly contradicts the claims and specification of the '705 Patent

Petitioner's construction directly contradicts the claims and specification. *See supra,* §III.A.1. Claims 3, 10, and 17 ***require "two different" forward voltages to an "operating LED circuit."*** Adopting Petitioner's construction for "forward voltage" directly contradicts the express language of the claims. *See, e.g., Phillips*,

415 F.3d at 1312 ("It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'") (internal citations and quotations omitted). *ACTV, Inc. v. Walt Disney Co.,* 346 F.3d 1082, 1088 (Fed. Cir. 2003) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms").

Petitioner's construction also reads out embodiments in the specification expressly disclosing multi-voltage circuits. *See, e.g.,* Ex. 1001 ['705 Patent], 3:15-17 ("This invention comprises circuits … driven with more than one AC or DC forward voltage 'multi-voltage' …"), 6:7-9 ("According to another aspect of the invention, a multi-voltage … LED circuit…"), 6:50-56 ("multiple individual discrete LED chips are used to form at least one multivoltage … LED circuit. … Each multi-voltage … LED circuit … comprises at least two single voltage AC LED circuits."). Further, interpreting forward voltage to be one fixed minimum voltage would be 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 discussed above, including the embodiments covering the stated purpose of the patent. *See, e.g.,* Ex. 1001 ['705 Patent], Title, Abstract, 3:15-17, 4:40-43, 5:3-6, 5:47-54. *See, e.g., Nobel Biocare Services AG v. Instradent USA, Inc.*, 903 F.3d 1365 (Fed. Cir. 2018) ("there is a

strong presumption against a claim construction that excludes a disclosed embodiment.") (*quoting In re Katz Interactive Call Processing Patent Litig*., 639 F.3d 1303, 1324 (Fed. Cir. 2011).

Petitioner argues its construction 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). That argument mischaracterizes the intrinsic record. While there are embodiments in the specification that disclose LED circuits with a single voltage, the express field of the invention "specifically relates to multiple voltage level … light emitting diode circuits." Ex. 1001 ['705 Patent], 3:43-45. As discussed in the preceding paragraph, multiple embodiments discuss providing multiple voltages to a single LED circuit. Any construction interpreted to limit claims 3, 10, and 17 to a single predetermined voltage reads out disclosed embodiments and contradicts the claims themselves, the specification, and the stated purpose of the '705 Patent.

Further, the '705 Patent discusses that two LED circuits may be configured to operate at a first forward voltage level when connected in parallel and a second forward voltage level when connected in series. *See, e.g.,* Ex. 1001 ['705 Patent], 4:16-22 ("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 AC LED circuits in series."). Thus, the '705 Patent teaches combining multiple LED circuits in parallel or series to create a multi-voltage LED circuit.

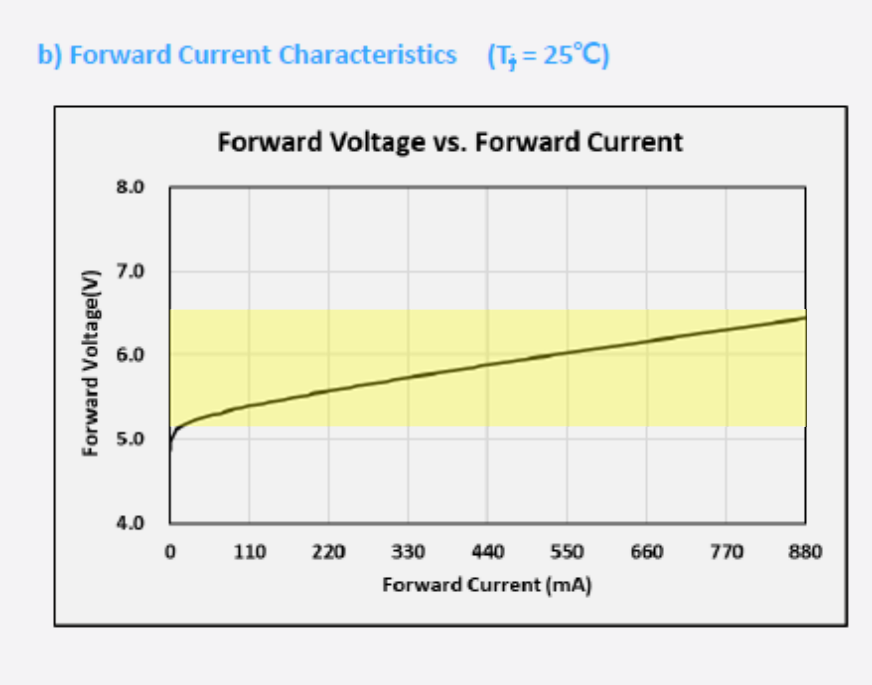
The extrinsic record underscores that Petitioner's proposed construction is nonsensical. For example, LED datasheets are clear that the type of commercially available LEDs that the '705 Patent is directed to are not limited to a single minimum voltage. Ex. 2036 [Samsung Datasheet] is a publicly available datasheet for a typical LED, Samsung High Power LED LH502C. Page 3 lists various electro-optical characteristics for the LED. Ex. 2036 [Samsung Datasheet], 3. One characteristic is "Forward Voltage V_F". *Id.* As can be seen below, the datasheet lists a "Min." (the minimum, 5.9V.), a "Typ." (typical forward voltage, 6.1V), and a "Max." (maximum forward voltage, 6.3V). Thus, the Samsung datasheet recommends a range of forward voltages between 5.9 and 6.3V, not one single forward voltage and not just a minimum voltage.

b) Electro-optical Characteristics (I_F = 640 mA, T_j = 25℃)

Item	Unit	Rank	Min.	Typ.	Max.
Forward Voltage (V_F)	V	YE	5.9	6.1	6.3

Similarly, page 10 of Ex. 2036 [Samsung Datasheet] (annotated below) displays various characteristic graphs for the LED. In the top left corner is a graph

of forward voltage versus forward current. As can be seen from the graph, current flows from a forward voltage of around 5V to around 6.5 V. Ex. 2036 [Samsung Datasheet], 10. Again, this demonstrates there is a range of potential forward voltages for the Samsung LED depending on the amount of current provided.



Other portions of the datasheet are clear that the amount of current determines the luminous flux (which determines the perceived brightness of the LED), for the LED. Thus, multiple voltages may be applied to the LED depending on the desired brightness of the LED during operation. When additional LEDs are added in series to the LED circuit (as taught in the '705 Patent), the forward voltage would necessarily change to account for the voltage drop of the additional LEDs.

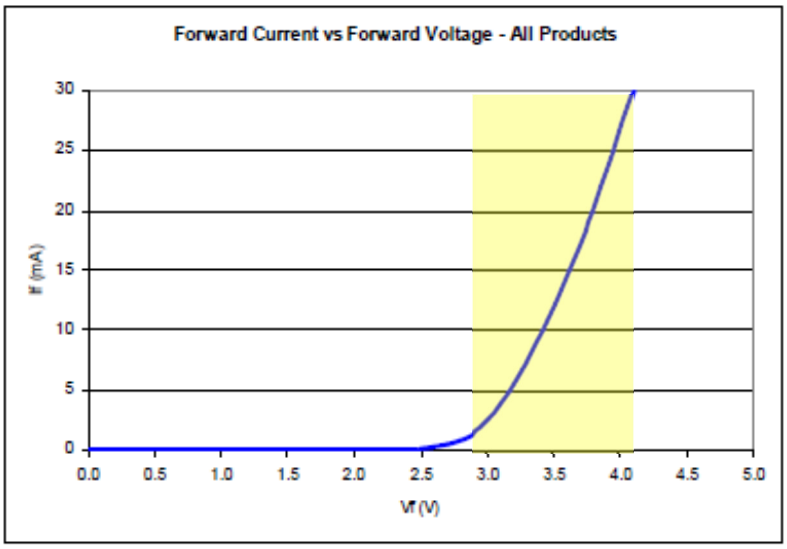
In another example, Ex. 2037 [Cree Datasheet] is a publicly available datasheet from the 2003 time frame for Cree MegaBright LEDs in the CxxxMB290-S0100 series. As shown at page 2 of Ex. 2037 [Cree Datasheet] (annotated below), the typical forward voltages for these LEDs can range from a minimum of 3.0V to a maximum of 3.8 or 4.0V. Once again, there is no single forward voltage associated with the LED, and the forward voltage is not limited to a minimum.

Typical Electrical/Optical Characteristics at T_A = 25°C, If = 20mA Note 3

Part Number	Forward Voltage (V_f, V)			Reverse Current [I(Vr=5V), μA]	Peak Wavelength (λ_p, nm)	Full Width Half Max (λ_D, nm)	Optical Rise Time (τ, ns)
	Min	Typ	Max	Max	Typ	Typ	Typ
C460MB290-S0100	3.0	3.5	3.8	10	458	26	30
C470 MB290-S0100	3.0	3.5	3.8	10	468	26	30
C505 MB290-S0100	3.0	3.8	4.0	10	502	30	30
C527 MB290-S0100	3.0	3.8	4.0	10	518	35	30

At page 4, the Cree datasheet also shows a characteristic curve of forward current versus forward voltage that is similar to the graph from the Samsung datasheet (albeit with the axes switched.) Ex. 2037 [Cree Datasheet], 4. As the Cree graph shows below, these LEDs have a forward voltage range of about 3.0V to 4.0 or 4.5V depending on the current. Ex. 2037 [Cree Datasheet], 4. Again, the forward voltage is not limited to a single minimum voltage.

Characteristic Curves



Other contemporary LED datasheets had similar tables and disclosures showing ranges of forward voltages. *See, e.g.,* Exs. 2018 [Everlight Datasheet], 3-4; 2042 [Lite-On Datasheet], 4-5. Thus, an LED's forward voltage is not limited to a single minimum forward voltage, as proposed by Petitioner.

ii. The Petition fails its heavy burden to show that prosecution history disclaimer applies

Petitioner's proposed construction rests entirely on a statement from the file history of the grandparent '164 Application that "The 'forward voltage' of an LED circuit, as recited in claim 1 [of the '164 Application], 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."). Pet., 24-25. Petitioner

characterizes this out-of-context statement as an "express definition" of forward voltage as used in the claims of the '705 Patent in order to provide a limiting construction. *Id.* Petitioner's proposed limiting construction is incorrect because it contradicts the claims, specification, and extrinsic evidence and is inconsistent with the prosecution history when placed in context.

"The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art." *Thorner v. Sony Computer Entertainment of America LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (*citing Phillips v. AWH Corp*., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).) "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Id.* Where the specification reveals "a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess," then the "inventor's lexicography governs." *Phillips*, 415 F.3d at 1316.

Here, the claims and the specification of the '705 Patent directly contradict Petitioner's proposed construction. *See supra,* §III.A.1-2. Where, as here, Petitioner argues prosecution history by itself overrides the clear language of the claims and specification, the doctrine of prosecution disclaimer required Petitioner to show the prosecution history contained a clear and unmistakable disavowal.

Lazare Kaplan Intern., Inc. v Photoscribe Technologies, Inc., 628 F.3d 1359 (Fed. Cir. 2010) ("To the extent that the Defendants contend that these statements amount to a disclaimer of subject matter, these statements fall short of the clear and unmistakable disavowal necessary for the doctrine of prosecution disclaimer to apply."); *Omega Eng'g, Inc. v. Raytek Corp.,* 334 F.3d 1314, 1325–26 (Fed. Cir. 2003) ("[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable."); *see, e.g., Phillips v. AWH Corp*., 415 F.3d at 1317 ("because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.").

Despite eligibility issues arising in the related PGR2022-0009, 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. The Petition therefore does not attempt to meet its burden to show by a preponderance of the evidence that the statement constitutes a clear and unmistakable disavowal of claim scope. Petitioner's construction should be rejected on this basis alone.

Indeed, 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. The context of the '001 Patent file history (which the Petition failed to discuss) makes it clear that the Applicant did not intend to disclaim any interpretation of forward voltage other than a single minimum voltage. There, the Examiner had rejected claim 1 of the '164 Application over the prior art reference Colby. Ex. 1023, 9. In response, the Applicant amended claim 1 of the '164 Application to include the limitation "wherein the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V or greater." Ex. 1023, 9. This limitation is missing from, and different than any limitation in, the '705 Patent. Ex. 1020 ['001 Patent], claims 1, 6, 11, 16.

Further, the issue being addressed in the '001 Patent file history was also different. There, the Applicant was arguing that the "recited forward voltage [of an LED] is different from the AC voltage provided by a typical wall outlet." Ex. 1023 [June 13, 2019 Remarks], 9. The issue of whether forward voltage is different from AC mains is not relevant to the arguments made in this PGR.

The response also qualified its statement to be limited to the then-current version of claim 1 of the '164 Application. *Id.* ("'forward voltage' of an LED circuit, as recited in claim 1 [of the '164 Application], is the minimum voltage …",

"the recited forward voltage [in claim 1 of the '164 Application] is different from the AC voltage provided by a typical wall outlet."). The pending claim language was "forward voltage of 6V or greater" and the issue was whether an AC mains voltage (as taught in the Colby reference) constituted a "forward voltage of 6V or greater." Ex. 1023 [June 13, 2019 Remarks], 9. No similar language is present in any of the claims of the '705 Patent. Thus, on its face, Applicant's statement applies only to the then-pending version of claim 1 of the '164 Application, and only to the issue of whether AC mains is a forward voltage as claimed in claim 1 of the '164 Patent. It is not a clear and unmistakable disavowal of claim scope applying to the (different) claims of the '705 Patent.

Further, the statement itself is ambiguous. "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:

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

Ex. 2038 [Bald Engineer], 4. See id., 5 ("[t]he goal is to set the Forward Current for the LED at 20mA which means the LED will drop 1.8-2.2V."). This is inconsistent with Petitioner's proposed construction and consistent with PO's proposed construction because it shows a range of possible forward voltages for a single exemplary LED (let alone an LED circuit composed of multiple LEDs in multiple configurations, as required by the claims). Thus, Bald Engineer directly contradicts Petitioner's interpretation of the '001 file history. Accordingly, Petitioner's first construction should be rejected.

It is a bedrock principle of patent law that "the claims are 'of primary importance, in the effort to ascertain precisely what it is that is patented.' *Phillips*, 415 F.3d at 1312 (*quoting Merrill v. Yeomans*, 94 U.S. 568, 570, 24 L.Ed. 235 (1876)). Further, "the prosecution history … often lacks the clarity of the specification and thus is less useful for claim construction purposes" than the specification. *Phillips*, 415 F.3d at 1317. *Phillips*' guidance is especially instructive here, where the 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. See, e.g., Ex. 1023 at 9. As discussed above, the claims and specification of the '705 Patent repeatedly and unambiguously require that LED circuits have multiple forward voltages. See §III.A.1, above. 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. Accordingly, Petitioner's first construction should be rejected.

b. Petitioner's alternate construction is incorrect

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. In essence, Petitioner's alternate construction completely ignores the intrinsic record and the context in which "forward voltage" is used.

First, as discussed above, claims 3, 10, and 17 require the first LED circuit to be "operating." *See also* Ex. 1001 ['705 Patent], claims 1, 4, 7, 8, 11, 14, 15, and 18 (also referring to "operating LED circuits."). The forward voltage cannot be just ***any*** voltage because when the forward voltage is outside of the operating range of the LED circuit, the LED circuit will not provide light or will otherwise not operate. Similarly, as discussed above in §III.A.1, the specification is clear that the forward voltage "drives" the LED circuits. *See, e.g.,* Ex. 1001 ['705 Patent], 3:15-18; 4:37-39; 4:42-49; 5:30-37. This means that the forward voltage applied to the LED circuit is within the appropriate range to allow the LED to illuminate as intended. Even the materials relied upon to support Petitioner's first proposed construction indicate that the forward voltage is a specified value (or range of values) defined by the specific LED(s) being used. *See, e.g.,* Ex. 2038 [Bald Engineer], 3 ("forward voltage rated at 3.0 volts), 4 (showing a range of forward

voltages between 1.8V and 2.2V). Thus, Petitioner's second proposed construction is also incorrect.

The forward voltage should therefore be construed as the operating voltage for the claimed LED circuit.

B. "switch" / "selectable by a user switching the switch"

The Petition proposes the term "switch" and "selectable by a user switching the switch" for construction. Pet. 26. Petitioner argues that switch should be given its plain and ordinary meaning but does not propose a construction. Pet., 26-28.

The construction of the term "switch" does not appear to be relevant to the issues raised in this Preliminary Response ("POPR"). Therefore, for purposes of this POPR only, PO does not propose a construction. Should the Board institute this PGR, PO reserves its right to construe the term "switch" and/or "selectable by a user switching the switch" during the trial phase.

IV. THE '705 PATENT IS INELIGIBLE FOR POST GRANT REVIEW

A. Petitioner Has Failed To Demonstrate Any Claims Lack Support in By Pre-AIA Applications

The Petition presents seven different sets of claims that it argues lack support for an effective filing date before March 16, 2013: (1) claims 1-20 of the '705 Patent (Pet., 13-15), (2) claims 3, 10, and 17 of the '705 Patent (Pet., 16-18), (3) claims 3, 10, and 17 of the '341 Patent (the Parent to the '705 Patent) (Pet., 19),

(4) claims 4, 11, and 18 of the '341 Patent (Pet., 20), (5) claims 1-15 of the '001 Patent (the grandparent patent to the '705 Patent) (Pet., 21), (6) claim 15 of the '001 Patent (Pet., 21-23), and (7) claim 9 of the '705 Patent (Pet., 23). Each of these sets of claims is supported by pre-AIA applications.

The '705 Patent claims priority to three applications and two provisional applications filed before March 16, 2013:

- U.S. Patent Application Ser. No. 13/322,796, filed Nov. 28, 2011, nationalized from International Application No. PCT/US2010/001597, filed May 28, 2010, which claims priority to U.S. Provisional Application No. 61/217,215, filed May 28, 2009, and
- U.S. Patent Application Ser. No. 12/287,267, filed Oct. 6, 2008, which claims priority to U.S. Provisional Application No. 60/997,771, filed Oct. 6, 2007 (collectively, the "Pre-AIA Applications").

The Pre-AIA Applications are exhibits 1014-1019 in this PGR.

Petitioner has the burden of establishing eligibility for post-grant review. *See Trican Industries, Inc., v. Little Giant Ladder Systems, LLC*, PGR2021-00044, Paper 10, 14 (PTAB Aug. 3, 2021); *Mylan Pharms. Inc. v. Yeda Res. & Dev. Co.*, PGR2016-00010, Paper 9, 10 (PTAB Aug. 15, 2016); *US Endodontics, LLC v. Gold Standard Instruments, LLC*, PGR2015-00019, Paper 17, 9–12 (PTAB Jan. 29, 2016).

As discussed below, in each case, the Petition advances conclusory arguments that fail to meet its burden to show the claims are not supported in a Pre-AIA Application. While Petitioner argues in certain places that the institution decision in the related PGR2022-00009 should control, that decision was only preliminary, was on a different record, and was directed to different claims and evidence. In the present case, PO has advanced numerous new arguments and identified additional evidence that were not considered in the institution decision for PGR2022-00009. The additional evidence and argument in the present case underscores how the identified claims have written description support in pre-AIA applications regardless of the outcome in PGR2022-00009. Accordingly, post grant review is not available for the '705 Patent.

1. Petitioner Incorrectly Applies The Legal Standard For Written Description

Petitioner's arguments rely on overly limiting (and sometimes implicit) claim constructions to create alleged written description and impossibility issues for claims that are straightforward and easily understandable on their face. Not only are Petitioner's limiting constructions incorrect, but Petitioner relies on an overly narrow interpretation of §112 that would require each claim to include language that mirrors verbatim disclosure in the specification. Pet., 11-12. That is not the test for written description. . "[T]he test for sufficiency is whether the

disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. *Ariad Pharm., Inc.*, vl. *Eli Lilly and Co.*, 593 F.3d 1336, 1351 (Fed. Cir. 2010). *See also Crown Packaging Technology, Inc. v. Ball Metal Beverage Container Corp.*, 635 F.3d 1373, 1380 (Fed. Cir. 2011) ("The test for sufficiency of a written description is whether the disclosure clearly allow[s] persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.") (internal quotation omitted) ; *see also Zoltek Corp. v. U.S.*, 815 F.3d 1302, 1308 (Fed. Cir. 2016) (same). "The disclosure must 'reasonably convey[ ] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Crown Packaging*, 635 F.3d at 1380. The written description requirement does not require the specification describe the claimed invention *in haec verba. Id.* at 1352. *See PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Circ. 2008) ("disclosure does not have to provide *in haec verba* support in order to satisfy the written description requirement"). Further, "[a] claim will not be invalidated on section 112 grounds simply because the embodiments of the specification do not contain examples explicitly covering the full scope of the claim language." *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005).

Thus, the test is whether one of ordinary skill in the art would recognize that the inventor invented what is claimed, not whether each limitation of each claim is repeated verbatim in pre-AIA applications.

2. The Embodiments of the '705 Patent Are Meant To Be Combined

Petitioner argues, without analysis, that separate aspects or embodiments disclosed in a specification may not be combined to satisfy the written description standard. Pet., 12-13.The determination of whether disclosure in different embodiments or different portions of the specifications may be claimed together is based on the disclosure of the patent and technology at issue, and the Petition does not provide this analysis.

The cases Petitioner raises are distinguishable because they discuss embodiments that are "never linked together in the specification." Pet., 12-13; *Flash-Control, LLC v. Intel Corp.*, No. 2020-2141, 2021 WL 2944592, at *4 (Fed. Cir. 2021). *See also Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336, 1349 (Fed. Cir. 2013) (combined different variants disclosed in the specification with no indication those variants should be combined). *Hyatt v. Dudas*, 492 F.3d 1365, 1371 (Fed. Cir. 2007) is not applicable because the issue was that the applicant did not attempt to show where in earlier applications the allegedly missing elements were located or how they were linked. And *Ariad*

Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1352 (Fed. Cir. 2010) does not appear to discuss the combinability of different embodiments but does recognize that the specification need not "recite the claimed invention *in haec verba*."

Here, the intrinsic record is clear that the various claimed aspects of the '705 Patent are meant to be combined—that is, different LED circuits are disclosed that are meant to connect and disconnect from one another in series and parallel configurations and from LED drivers and switches. *See* Ex. 1001, ['705 Patent], 3:46-49 ("[i]t would further be advantageous to provide multi-voltage and/or multi-brightness level devices that can provide electrical connection options for either AC or DC voltage operation at preset forward voltage levels of 6V or greater."). *See also id.*, 3:4-7, 8:10-14 ("Such packages can be of ***varied make up*** and can be ***combined with each other*** to create desired systems ***given the scalable and compatible arrangements possible*** with, and resulting from, the invention."), 7:50-54 (emphasis added). Thus, the '705 Patent intends for different packages (such as those disclosed in Figs. 1-3, 6, 8, and 10-12) to be "combined with each other" as well as AC or DC power sources, switches and drivers.

Further, the '705 Patent repeatedly indicates that its different figures are related. *See, e.g.,* Ex. 1001 ['705 Patent], 10:18-21, 10:30-34, 10:55-57, 10:62-64, 11:24-28, 11:42-45, 12:1-3. The Figures support this interpretation. Figs. 1-3, 6, 8, and 10-12 are examples of unconnected LED and rectifier circuits clearly meant to

be integrated into larger circuits in various configurations. *Id.*, 9:66-10:1 ("to provide various connectivity options…"), 10:18-21, 10:30-34, 11:65-67 ("electrical contacts 96 are used to wire the at least two series LED circuits 92 into [various configurations]." Figs. 4, 5, 7 and 9 are examples of exemplary configurations for the circuits in the other Figures. *Id.*, 10:55-59, 10: 62-64, 11:24-28, 11:42-45.

In other words, the '705 Patent and its ancestor applications describe an integrated invention with different "scalable and compatible" features, not an invention broken down into disparate, unrelated embodiments that are never linked together in the specification.

3. Claims 1-20 of the '705 Patent

Petitioner argues that 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" is new matter not present in any application from which the '705 Patent claims priority, and therefore not entitled to a priority date prior to March 16, 2013. Pet., 13-15. Petitioner is clearly incorrect.

The '597 PCT (filed May 28, 2010, which issued as the '539 Patent) and the provisional applications to which the '597 PCT claims priority, provide support for every claim of the '705 Patent. *See* §VI, below. For example, the '215 Provisional

discloses this limitation. Specifically, the '215 Provisional discloses an embodiment where "a dimmer switch regulates voltage … or may have integrated circuitry that allows for adjustability of the otherwise relatively fixed voltage … output of the LED circuit driver." Ex. 1014 ['215 Provisional], ¶[0022]; Ex. 1001 ['705 Patent], 9:22-29 (same). In this embodiment, "[t]he LED circuits get brighter as the voltage … of the LED circuit driver output is increased to the LED circuit." *Id.* Thus, the '215 Provisional discloses that a switch that adjusts the output of the LED driver to regulate the input to the LED circuit. *See generally* Ex. 1014 ['215 Provisional], ¶¶[0018]-[0022].

The Petition argues that "the dimmer switch in [the '215 Provisional] is not disclosed as being connected between the output of the LED driver and the LED circuits as claimed." Pet., 15. Petitioner's argument contradicts the disclosure of the '215 Provisional discussed above, which indicates the dimmer switch increases or decreases the voltage "output of the LED driver" to regulate "the input to the LED circuit." Ex. 1014 ['215 Provisional], ¶[0022]. Further, the dimmer switch is "coupled to" the LED driver. *Id.* Therefore, the '215 Provisional clearly teaches the dimmer switch can be placed at the output of the LED driver. Further, this knowledge was clearly within the possession of the inventor at the time.

To the extent the Petition is arguing that the '215 Provisional does not disclose that the dimmer switch could be combined with the other LED circuits

disclosed in the specification, such an interpretation would render the disclosure of the switch meaningless. Further, the phrase "the LED circuit driver" in ¶[0022] refers to "the LED circuit driver" in ¶¶[0018]-[0021], so the dimmer switch in ¶[0022] is clearly meant to be combined with the LED circuit driver and associated circuitry discussed in those paragraphs. In addition to above, the '215 Provisional recognizes that the embodiments disclosed therein "can be combined with each other." Ex. 1014 ['215 Provisional], ¶[0016] ("Such packages can be of varied make up and can be combined with each other to create desired systems given the scalable and compatible arrangements possible with, and resulting from, the invention."). Thus, the '215 Provisional teaches its different embodiments can be combined, including the dimmer switch.

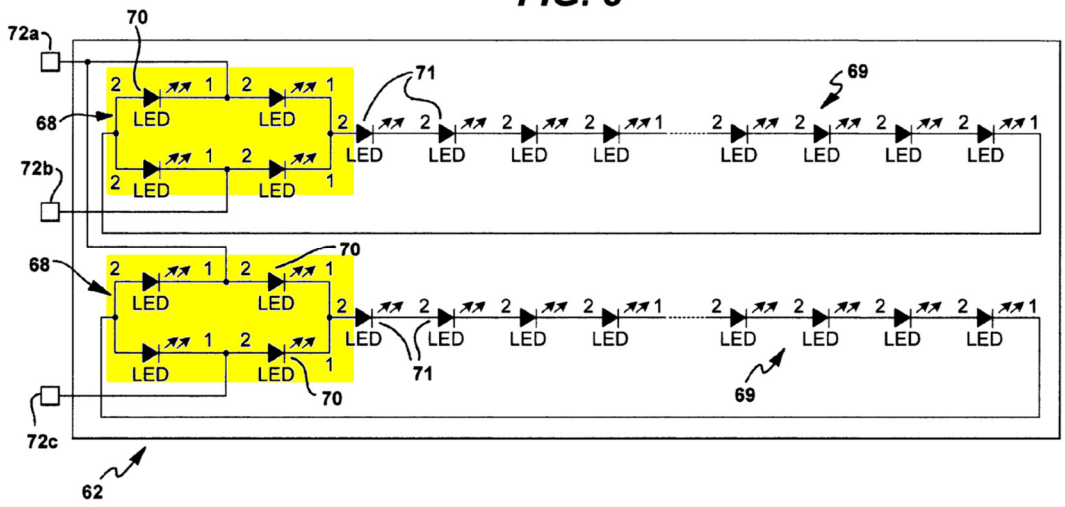
Petitioner argues that the '215 Provisional "does not disclose the claimed switch because [it] relates solely to AC driven LEDs." Pet., 14. Petitioner is wrong for several reasons. Both the '215 Provisional and '705 Patent disclose ordinary drivers that output DC voltages to drive LED circuits. Ex. 1014 ['215 Provisional], ¶¶[0007] ("LEDs … historically have been driven by DC voltage sources… Some LEDs … provid[e] a higher voltage LED typically driven with 5V DC or 12V DC."); Ex. 1001 ['705 Patent], 1:52-59 (same). The quotes above indicate that the "typical" LED driver outputs DC voltage.

Other embodiments also disclose drivers with DC voltage outputs. For example, the '215 Provisional discusses an "LED circuit inverter driver" that provides a "relatively fixed voltage as the LED circuit load changes." Ex. 1014 ['215 Provisional], ¶[0019]. This output voltage is a "relatively constant [e.g., DC] output to a load." *Id.*

Similarly, the '215 Provisional's dimmer embodiment discloses an LED circuit driver with a "relatively fixed voltage and/or relatively fixed frequency output." *Id.*, ¶[0022]. DC voltages are "relatively fixed" voltages. Further, the '215 Provisional Figs. 16-19 disclose bridge rectifiers that serve as drivers outputting DC voltages to LED circuits. Ex. 1014 ['215 Provisional], Figs. 16-19. Bridge rectifiers are LED drivers with an AC input and DC output.

Petitioner admits that the '796 and '597 PCT Applications disclose bridge rectifiers. Pet., 15 ("Pre-AIA Application nos. 13/322,796 (Ex. 1016) and PCT/US2010/001597 (Ex. 1018) disclose bridge rectifiers …"). The Petition cites paragraph 59 (discussing Fig. 8) and Fig. 8 of the '796 Application. As shown below, the circuit of '796 Application Fig. 8 appears to be substantively identical to Fig. 18 of the '215 Provisional. The bridge rectifiers (i.e., LED drivers) are highlighted in yellow below:

FIG. 8



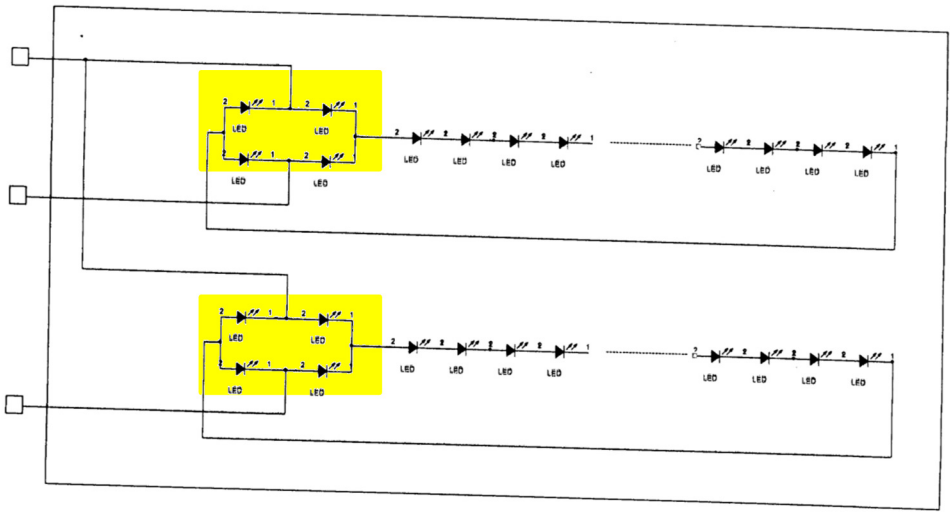


Fig. 18

Given Petitioner's admission that the '796 Application discloses bridge rectifiers (i.e., LED drivers with DC outputs) (Pet., 15) and Petitioner's admission that "bridge rectifiers can be used to convert AC to DC." (Pet., 10), there is no question the '215 Provisional also discloses LED drivers in the form of bridge

rectifiers. Petitioner distinguishes the bridge rectifiers in the '796 Application because the '796 Application allegedly "fail[s] to disclose the claimed switch, in isolation or in combination with the other aspects of the claim." Pet., 15. As discussed above, this is not the case for the '215 Provisional, because the '215 Provisional expressly discloses switches between the output of the LED driver and the LED circuit. Ex. 1014 ['215 Provisional], ¶[0022].

Second, even if there were a requirement that the claims can only relate to embodiments disclosing AC driven LEDs (which there is not), the claimed LED lighting systems *are* AC driven. Ex. 1001 ['705 Patent], 12:34-35 ("an LED driver including an input configured to connect to an AC voltage power source"); 13:12-13 (same), 14:15-16 (same). Consistent with the embodiments of the '215 Provisional described above, the claimed LED driver's input is AC and its output is DC. Thus, the claims are consistent with the disclosure in the '215 Provisional.

Third, none of the alleged support Petitioner cites clearly indicates a lexicographic definition of the claim term "LED driver" or express disavowal of claim scope such that the ordinary and meaning of the term "LED driver"—which includes DC LED circuit drivers—would be disregarded. *Thorner v. Sony Computer Entertainment of America LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) ("The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art."). While Petitioner argues the

'215 Provisional defines "AC driven LED circuits" as "driven circuits," (Pet., 14-15), the claim term here is "LED driver;" the term "driven circuits" is not used in the claims. Further, the inventor clearly disclosed that LED drivers can be part of LED circuits, and can convert AC to DC as in the bridge rectifier embodiments. *See, e.g.,* Pet., 10, 15, Ex. 1001 ['704 Patent], 1:43-48 ("The present invention specifically relates to multiple voltage level … light emitting diode circuits, single chips, packages and lamps 'devices' for direct AC voltage power source operation, bridge rectified AC voltage power source operation or constant DC voltage power source operation."). Additionally, as discussed above, the '215 Provisional is clear that LED drivers typically output DC voltage (and that LED drivers can be configured to convert AC input to DC), and the Petition identifies nothing in the intrinsic record that requires a departure from the plain and ordinary meaning.

Petitioner also argues that "there is no disclosure of combining this dimmer switch in [the '215 Provisional] with the other elements recited in the independent claims." Pet., 15. Again, Petitioner's argument contradicts the plain language of the '215 Provisional, which states "[a]ccording to other aspects of the invention, the LED circuit driver may be coupled to a dimmer switch…" Ex. 1014 ['215 Provisional], ¶[0022]. Thus, the dimmer switch disclosure is only one of several "aspects of the invention". *Id.* Further, "*the* LED circuit driver" explicitly refers to the LED circuit driver disclosed throughout the various embodiments of the '215

Provisional. *Id.*, ¶¶[18]-[21]. Contrary to Petitioner's arguments, the dimmer switch is not a standalone embodiment but was disclosed as an optional aspect of the invention to be combined with the other aspects of the invention.

Accordingly, the Pre-AIA applications fully support the claim 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."

4. Claims 3, 10, and 17 of the '705 Patent

Claims 3, 10, and 17 of the '705 Patent 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, 13:22-25, 14:25-28. In other words, this element requires the concept of a switch that switches between two voltages to one or more circuits. Petitioner argues that the Pre-AIA applications do not support this limitation. Pet., 16-18.

Petitioner is incorrect. Claims 3, 10, and 17 of the '705 Patent are supported by the pre-AIA applications. *See* §VI, below. For example, the '597 PCT expressly discloses a "multi-voltage AC or DC operable LED device" (Ex. 1018 ['597 PCT], ¶[0024]) that allows for "forward voltage drive selection." Ex. 1018 ['597 PCT], ¶[0025]. The Petition failed to cite this language in arguing that the '597 PCT does not disclose switching between two different forward voltages. Pet., 17. While the

’597 Application often discusses an “LED device”, the circuitry within the “LED device” constitutes an “LED circuit.” Thus, the ’597 PCT discloses a switch (forward voltage drive selection) that provides more than one (i.e., at least two different) DC forward voltages to an LED circuit (“LED device”) as required by the claims.

Further, the ’597 PCT repeatedly discloses single multi-voltage LED circuits (that is, LED circuits that operate using more than one forward voltage) *See, e.g.,* Ex. 1018 [’597 PCT], ¶[0013] (“The art is deficient in that it does not provide a multi-voltage … circuit monolithically integrated on a single substrate”), ¶[0014] (“It would further be advantageous to have a multi-voltage … circuit that can provide options in voltage level, brightness level and/or AC or DC powering input power preference.”), ¶[0015] (“It would further be advantageous to provide multiple voltage level … light emitting LED circuits … that can be driven with more than one AC or DC forward voltage…”). Again, the Petition failed to discuss this clear disclosure. Pet., 17.

Thus, the ’597 PCT includes examples where (1) multiple voltages are provided to an LED “circuit” in the singular, and (2) multiple voltages are provided to LED “circuits” plural, which encompasses scenarios where each circuit is provided multiple voltages and scenarios where multiple circuits are provided different voltage levels.

Indeed, the '597 PCT describes a scenario in which a switch configured to provide a second, different forward voltage would not only be possible, but would be beneficial. Ex. 1018, ['597 APCT], ¶¶[0028], [0030] (describing scenarios where an LED device is "driven with at least two different DC forward voltages" and provides "a first forward voltage drive level when the two single voltage LED circuits are connected in parallel and a second forward voltage drive level … when the at least two LED circuits are connected in series."). In these embodiments, the "LED device" still comprises a single circuit and the second DC forward voltage is different than the first DC forward voltage. Ex. 1018, ['597 PCT], ¶¶[0028], [0030] (describing the second forward voltage level as "twice the level of the first forward voltage drive level").

Alternately, the dimmer switch embodiment of the '215 Provisional discussed above provides multiple levels of voltage to one or more LED circuits. *See supra,* §IV.A.3; Ex. 1001 ['705 Patent], 9:22-29, Ex. 1014 ['251 Application], ¶[0022].

The Petition fails to address these clear supporting disclosures. Instead, Petitioner argues that these claims are rendered impossible due to Petitioner's overly limiting construction of "forward voltage" Pet., 16. In other words, Petitioner is using its unsupported construction to create an impossibility argument for straightforward claims that would clearly be understood to be possible. As

discussed above, Petitioner's construction is incorrect. *Supra*, §III.A; *Wasica Fin. GMBH v. Cont'l Auto. Sys., Inc.*., 853 F.3d 1272 at 1288 n.10 (Fed. Cir. 2017) ("It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous."); *Olaplex, Inc. v. L'Oreal USA, Inc.*, 845 Fed.Appx. 943, 949 (Fed. Cir. 2021) (same).

Petitioner also argues that "[n]o Pre-AIA Application discloses the claimed switch under any [ ] construction." Pet., 16. However, Petitioner provides no explanation and cites only to its section on claim construction and its expert declaration at paragraphs 41-43. *Id.*, 16-17. Paragraphs 41-43 of Petitioner's expert declaration are essentially a copy of the conclusory analysis in the Petition. Indeed, Petitioner's entire expert declaration is largely a cut-and-paste copy of the Petition and therefore entitled to little weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (designated precedential Feb. 10, 2023) ("the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight."). Further, as discussed above, Petitioner's limiting claim constructions are unsupported and incorrect. *See supra*, §III.A. Thus, Petitioner has failed to meet its burden.

Petitioner argues that the Pre-AIA applications do not provide support for "two different DC forward voltages" but only provides cursory references to those

applications. Pet., 17-18. Petitioner's arguments are selective and incorrect. For example, the '215 Provisional discloses a dimmer switch "that allows for adjustability of the otherwise relatively fixed voltage … of the LED circuit driver." Ex. 1014 ['215 Provisional], ¶[0022]. "The LED circuits get brighter as the voltage… of the LED circuit driver output is increased to the LED circuits." *Id.* Thus, the '215 Provisional expressly teaches providing multiple [i.e., at least two different] forward voltages to one or more LED circuits. *Id.* Similarly, as described above in §IV.A.3 and this section, the '597 PCT expressly teaches providing multiple forward voltages to an LED circuit. Accordingly, Petitioner's analysis is incorrect.

Petitioner next argues, without any discussion of the pre-AIA applications, that claims 3, 10, and 17 are unsupported in any pre-AIA application because these claims "include embodiments wherein the two different voltages are applied to only one of the *individual* LED circuits" and there is allegedly "no disclosure of a switch providing two different voltages to one 'or' the other LED circuit as claimed." Pet., 18. To the contrary, the pre-AIA applications clearly support such scenarios. For example, the switch of '215 Provisional may have "at least two positions each of which is connected to at least one circuit within the multi-brightness single chip AC LED." Ex. 1014 ['215 Provisional], ¶[0013]. Thus, the '215 Provisional teaches its switch may have numerous positions ("at least two")

and some of those positions may each be connected to a single (i.e., "at least one") circuit. And, as discussed above, the different positions of the switch provide different voltages (i.e., "multi-voltage.") to the LED circuit. Ex. 1014 ['251 Application], ¶[0022]; Ex. 1018, ['597 PCT], ¶¶[0028], [0030]. This disclosure encompasses scenarios where a switch has, for example, four different positions—two of which provide two different voltage levels to a first circuit and two of which provide two different voltage levels to a second circuit. Thus, claims 1, 10 and 17 are supported by the pre-AIA applications.

5. Claims 3, 10, and 17 of the '341 Patent

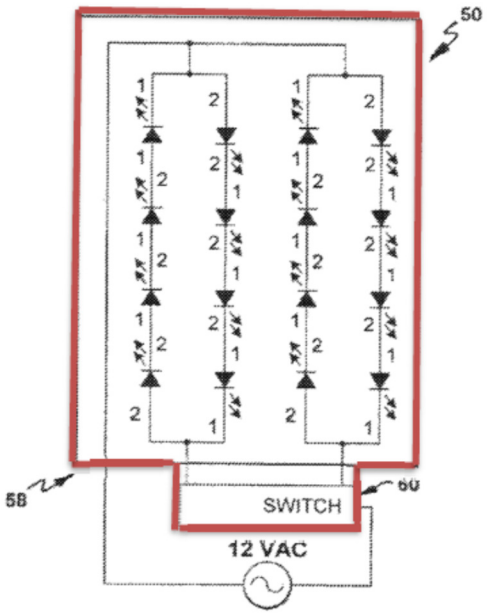
Claims 3, 10 and 17 of the '341 patent contain the same limitation as claims 3, 10, and 17 of the '705 patent: "wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit." Ex. 1006, 12:30-33, 13:1-4, 14:13-16. Thus, these claims are supported by pre-AIA applications for the reason discussed above in §IV.A.4.

6. Claims 4, 11, and 18 of the '341 Patent

The Petition argues that claims 4, 11, and 18 of the '341 Patent claim "impossible subject matter" that "is not disclosed in the Pre-AIA Applications." Pet., 20. Again, Petitioner's argument rests on an improperly narrow interpretation of the claims that renders them nonsensical.

These claims are far from impossible and are well understood on their face. Claim 4 requires "an LED lighting device comprising … a switch" wherein that "switch is connected between the AC voltage power source and the LED lighting device." Ex. 1006 ['341 Patent], claim 4. Thus, this claim is directed toward an arrangement similar to Fig. 7 of the '341 Patent, except that the box 50 comprising the LED device is extended to encompass switch 60 as shown in the red box below:

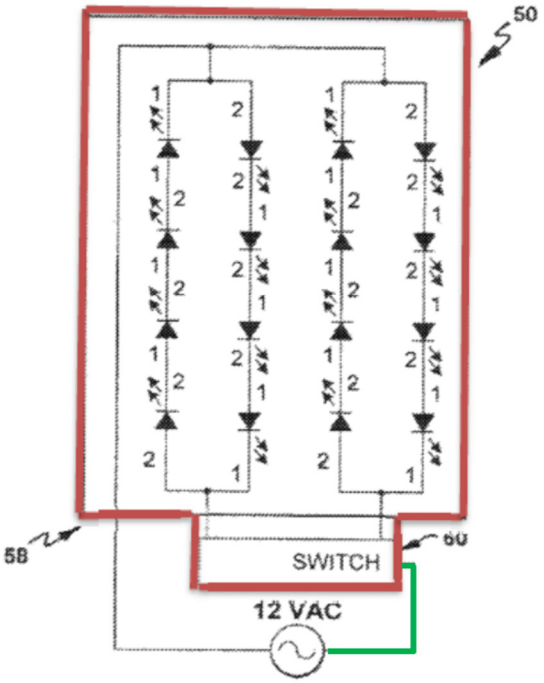
FIG. 7



Thus, the switch is within the lighting device but at the same time is connected between the lighting device and the power source. This is a natural arrangement for an LED device containing a switch. The independent claims characterize the LED device as "comprising" the switch and claims 4, 11, and 18

specify where in the LED device the switch would be connected relative to the power source. In other words, the claims are directed to a switch that acts as the interface between the AC voltage power source and the LED lighting device. *See, e.g.*, Ex. 1006 ['341 Patent], Figs. 7, 9 (showing a switch located between a voltage source and the rest of a LED device). As the interface, this switch is both *a part of* the LED lighting device (as the independent claims require) and *connected between* the AC voltage power source and the LED lighting device (as the dependent claims require). Annotated Fig. 7 shows a connection (in green) between the AC power source and the LED lighting device (in red):

FIG. 7



This connection is between the AC power source and the switch as required by the claim.

Finally, Petitioner has not satisfied and cannot satisfy its burden to show that claims 4, 11, and 18 are not supported in Pre-AIA Applications. The features of these claims are clearly supported and disclosed in at least the ’597 PCT. For example, Figs. 7 and 9 of the ’597 PCT clearly disclose a 2-way switch 60 connected between an AC power source and an LED lighting device. Ex. 1018, Figs. 7, 9, [0057]–[0058]. Further, the ’597 PCT discloses embodiments where the switch is part of the LED lighting device. *See* Ex. 1018 [’597 PCT] (“The multi-voltage … single chip AC LED and /or package is configured to provide a means of switching…”). Thus, claims 4, 11, and 18 of the ’341 Patent are supported by at least the ’597 PCT.

7. Claims 1-15 of the ’001 Patent

Petitioner argues that Claims 1–15 of U.S. Pat. No. 10,537,001 (the “’001 Patent,” the parent of the ’341 Patent and grandparent of the ’705 Patent) are not supported by any applications filed before March 16, 2013. Pet., 21. Petitioner’s argument is based on the limitation in ’001 Patent independent claims 1 and 11, which recites “a switch that is selectable by a user and configured to at least one of independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit.” Ex. 1020 [’001 Patent], claims 1 and 11.

Petitioner is wrong. The '597 PCT expressly discloses a "multi-voltage AC or DC operable LED [lighting] device" (Ex. 1018, ¶[0024]) that allows for "forward voltage drive selection." Ex. 1018, ¶[0025]. Further, the '597 PCT discloses a "switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit." Ex. 1018, ¶[0015]. *See also* Ex. 1018, ¶¶[0018] ("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."), [0056] ("the other side of an AC voltage source line is individually electrically connected to 56b and 56c with either a fixed connection or a switched connection…"), [0057] ("Figure 7 discloses a schematic diagram similar to the multi-voltage and/or multi-brightness LED device 50 shown in figure 6 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 50."); [0058] ("When one side of an AC voltage is applied to 72a and the other side of an AC voltage line is applied to 72b and 72c individually, the brightness level of the multi-brightness LED lighting device 62 can be increased and/or decreased [in] a fixed manner or a switching process."); Fig. 7 (showing a "2-way switch" that can switch either or both circuits on or off).

These examples disclose allowing a user to "individually" (i.e., independently) "connect[ ] and/or disconnect[ ]" multiple LED circuits on and off and switch "additional circuits on or off in addition to a first operating circuit." That is, the first operating circuit can be switched "on or off" as well as the additional circuits. Accordingly, the independent claims of the '001 Patent are supported by at least the '597 PCT.

8. Claim 15 of the '001 Patent

The Petition argues that the dimmer switch of '001 Patent, claim 15 is not supported in any pre-AIA application because "claim 15 requires a second "dimmer switch" that adjusts a voltage of the mains power source, which voltage is then received by the driver in the LED device." Pet., 21–23. This is incorrect.

First, the '597 PCT and '215 Provisional clearly disclose that a switch can adjust the voltage of an AC mains power source. *See, e.g.,* Ex. 1018 ['597 PCT], Fig. 9 (showing "2-way switch" 74 connected to AC power source); Ex. 1014 ['215 Provisional], Fig. 15 (showing "3-way switch" coupled to a "120 VAC" [i.e., AC mains] power source), Fig. 19 (showing "2-way switch" coupled to an AC power source). Second, the '215 Provisional teaches the switch may be a dimmer switch. Ex. 1014 ['215 Provisional], ¶[0022] ("the LED circuit driver may be coupled to a dimmer switch that regulates voltage or frequency … ."). Therefore,

the pre-AIA applications disclose a "dimmer switch [that] adjusts a voltage of the mains power source" as recited in claim 15.

Petitioner argues that the '215 Provisional does not support claim 15 because the dimmer of claim 15 "adjusts a voltage of the mains power source" while the '215 Provisional allegedly discusses a dimmer that "is coupled to the driver and adjusts the output of the driver." Pet., 22. Petitioner's distinction is not meaningful. The '215 Provisional states the "LED circuit driver may be coupled to a dimmer switch." Ex. 1014 ['215 Provisional], ¶[0022]. That does not require the dimmer switch to be located at the output of the driver. A dimmer switch coupled to the input of the driver (between the mains power source and LED driver) would increase or decrease the voltage to the LED driver, thereby adjusting the voltage at the output of the LED driver.

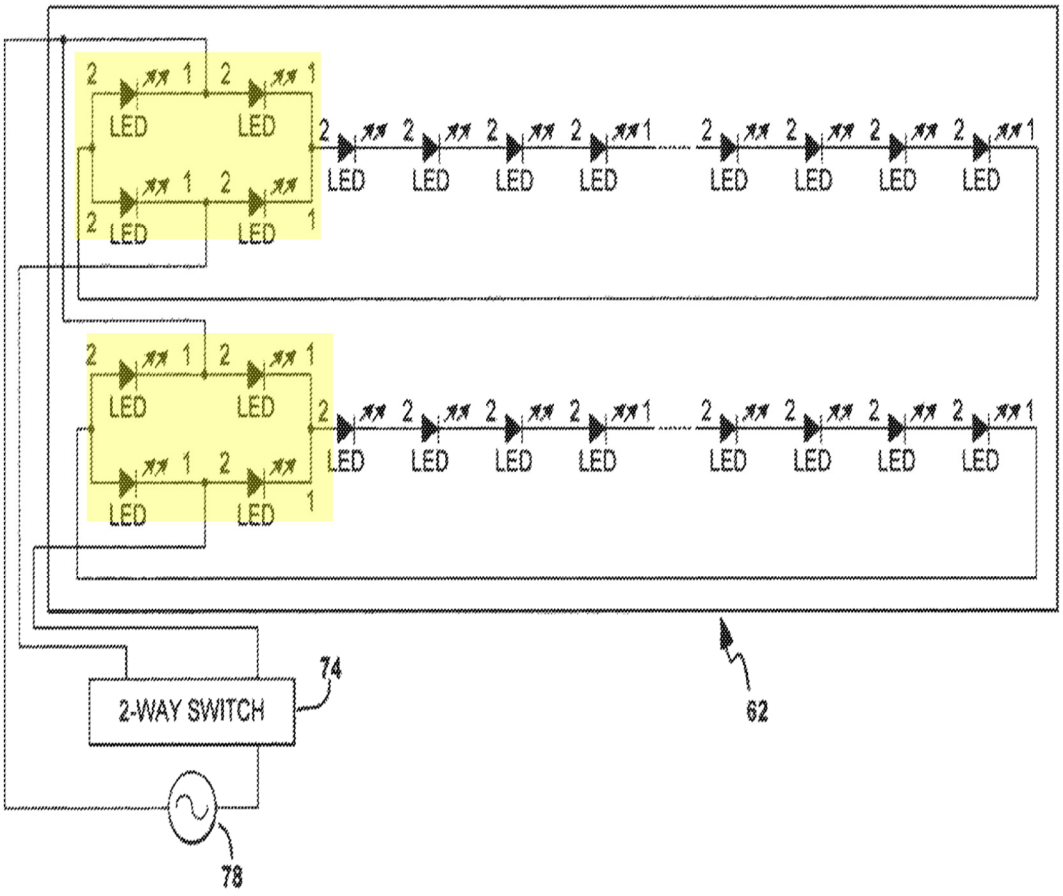
Petitioner also argues that "[n]o Pre-AIA Application discloses … wherein the dimmer switch functions 'regardless of a user's selection via the switch.'" Pet., 22. But the '215 Provisional's dimmer switch is just one "aspect[ ] of the invention," meaning it is intended to be incorporated into (and used as part of) other embodiments. Ex. 1014 ['215 Provisional], ¶[0022]. *See* §§IV.A.3, 4, *supra*. And the pre-AIA applications disclose numerous different switches. *See, e.g.,* Ex. 1014 ['215 Provisional], ¶[0013], Figs. 12, 13, 15, 19; Ex. 1018 ['597 PCT], ¶¶[0008], [0015], [0018], [0035], [0037], [0056]-[0059], Fig. 7, Fig. 9. Thus, the

'215 Provisional teaches the dimmer switch can be used in conjunction with the other disclosed switches, the inventor clearly possessed use of a dimmer switch in conjunction with other switches, and nothing in the other pre-AIA applications indicates to the contrary or otherwise prohibits more than one switch.

9. Claim 9 of the '001 Patent

The Petition additionally argues that '001 Patent claim 9 is not supported by any application prior to March 16, 2013, because claim 6 of the '001 Patent requires an "LED lighting device is configured to connect to a driver" and claim 9 requires an LED lighting device "further comprises the driver." Pet., 23. This is incorrect for several reasons. First, the "Pre-AIA Applications" clearly support a driver connected to an LED lighting device. *See, e.g.,* Ex. 1014, ¶¶[0021], [0022]; Ex. 1018, ¶¶[0025], [0030] (describing different drive settings for LED lighting devices). Second, there is nothing inconsistent in the structure of the claims. Independent claim 6 of the '001 Patent does not specify where the driver is located; dependent claim 9 is simply narrowing the independent claim by specifying the driver is part of the LED lighting device. Indeed, embodiments such as Fig. 9 of the '001 Patent show the driver (the bridge rectifier, in yellow, below) as part of the LED lighting device 62:

FIG. 9



Accordingly, the Board should reject this argument.

Petitioner has not met its burden to prove that any claim had an effective filing date on or after March 16, 2013. *Trican Industries*, PGR2021-00044, Paper 10, 14 (PTAB Aug. 3, 2021). Therefore, the '705 Patent is not subject to PGR and this Petition should be dismissed.

V. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DECLINE INSTITUTION UNDER 35 U.S.C. § 325(D)

35 U.S.C. § 325(d) states that "[i]n determining whether to institute . . . the

Director may take into account whether . . . the same or substantially the same prior art or arguments previously were presented to the Office." Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech, Inc*., 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("the PTO is permitted, but never compelled, to institute an IPR proceeding."). Thus, if the same or substantially the same prior art or arguments have previously been presented to the Board, the Board may exercise its discretion to deny institution. The Board has weighed the following non-exclusive factors in determining whether to exercise its discretion:

(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 v. B. Braun Melsungen, IPR2017-01586, Paper 8 at 17-18 (PTAB Dec. 15, 2017) (prec.)

A. The References In This PGR Are Duplicative of The Prior Art and Arguments Considered and Applied by the Examiner

Each *Becton Dickinson* factor favors denying institution.

1. *Becton* Factors (a), (b) and (d)

Factors (a), (b) and (d) each favor denying institution because the Bruning reference was considered during prosecution and the Bruning, Evanicky, Lee, Doheny and Van Winkle references are each cumulative and duplicative of the hundreds of prior art references considered during prosecution. Further, Doheny and Van Winkle (and grounds 4 and 5) should be ignored for the *Becton* analysis because those references are not prior art to the '705 Patent. *See* §VI, below.

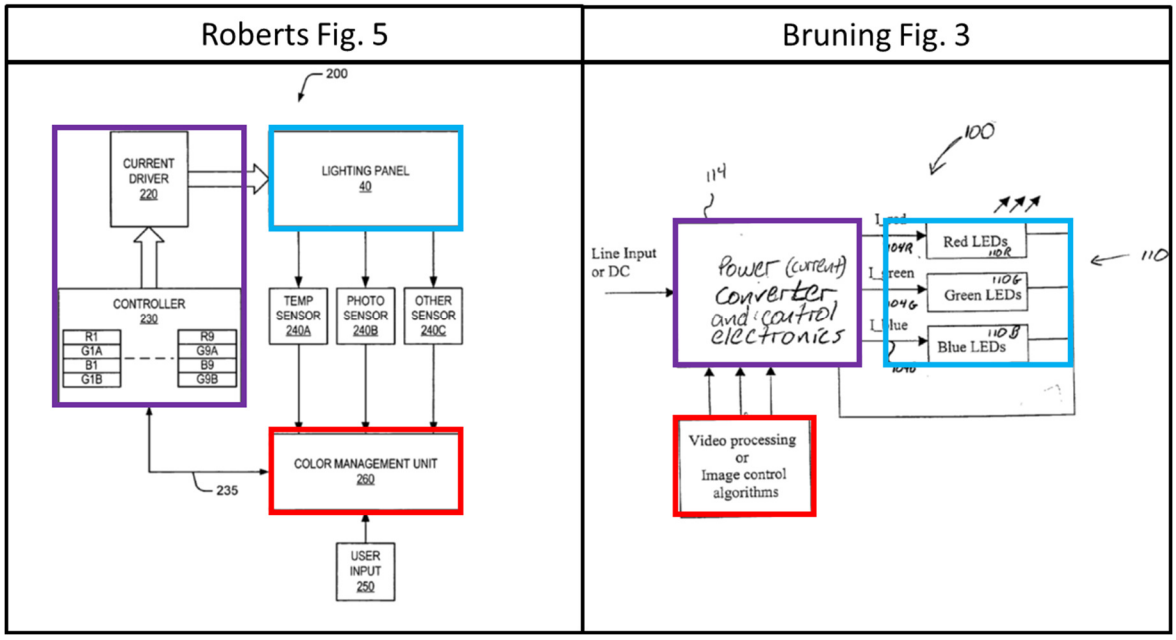
Bruning: Bruning is the sole reference for ground 2 of the Petition and the primary reference for grounds 3 and 6. Pet., 5. On December 7, 2021, PO submitted an IDS to the Patent Office disclosing the Bruning reference as the first listed U.S. Patent Application Publication. Ex. 2039 [12/7/2021 IDS]. The Examiner signed the IDS to indicate she had reviewed and considered Bruning on December 18, 2021. Ex. 2040 [12/18/21 IDS], 8. On December 22, 2021 the

Examiner issued the notice of allowance. Ex. 2041 [12/22/2021 Notice of Allowance]. There were no further amendments to the claims after this date. Thus, the Examiner reviewed and considered Bruning and determined that the claims of the '705 Patent are patentable over Bruning. Ex. 2040 [12/18/21 IDS], 8.

The reason the examiner did not need to discuss Bruning more explicitly during prosecution is that Bruning was cumulative to Lefebvre and Allen which she had already discussed in detail and issued a non-final rejection based on a combination of those references. Ex. 2006 [4-27-2021 Rejection], 2-9; *see also* §II.C.2, above. Bruning is cumulative to both Lefebvre and Allen. For example, both Lefebvre and Bruning are directed to LED lighting assemblies. *See, e.g.,* Exs. 2007, [Lefebvre], Abstract (LED lighting assembly for vehicles), 1004 [Bruning], Abstract (LED lighting assembly for a backlight). Allen, like Bruning, discloses "light emitting diode assemblies" with different color LED circuits. Ex. 2008 [Allen], ¶¶[0003], [0049].

While Bruning is directed to LCD displays and Lefebvre and Allen are not, the examiner discussed numerous other references during prosecution of the parent and ancestor patents, including the Roberts reference. Ex. 2015 [Roberts]; *see also* §II.C.2-3, above. Roberts is directed toward lighting panels for use in LCD displays. *Id.,* ¶¶[0004], [0005], [0059], [0065], [0075]. The Roberts reference was repeatedly discussed as the basis for several rejections during prosecution of the

'429 and '644 Applications. *See* §II.C.3, above; Exs. 2022 [January 11, 2018 Non-Final Rejection], 2-4; 2030 [July 29, 2016 Non-Final Rejection]. Roberts, like Bruning, discusses using different circuits ("paths" or "strings" in Roberts) for red, green and blue LEDs. *See, e.g.,* Ex. 2015 [Roberts], ¶¶[0051]-[0054]; Ex. 1004 [Bruning], ¶[0024]. A side-by-side comparison of Roberts Fig. 5 and Bruning Fig. 3 shows the systems are disclosing similar control and drive circuitry for backlighting, with the LED arrays (Roberts' "lighting panel") highlighted blue, the "power converter and control electronics" (Roberts' "controller" and "current driver") highlighted purple, and the video processing and image controls highlighted (Roberts' "color management unit") red.



Thus, the examiner not only considered Bruning, but also repeatedly discussed prior art duplicative of Bruning directed toward using LEDs for

backlights in LCD displays, and ultimately found the claims patentable over this prior art.

Bruning was also used as a primary reference for two grounds in PGR2022-00009 and IPR2022-00143, directed to the parent '341 Patent. *See, e.g.,* PGR2022-00009, Paper 1 at 4-5; IPR2022-00143, Paper 1, 4-5. PGR2022-00009 is awaiting final written decision at the time of filing and IPR2022-00143 was denied institution.

Thus, Bruning and duplicative prior art have been extensively considered and/or discussed by both the examiner and the Board.

Evanicky and Lee: For grounds 3 and 6, Petitioner adds the secondary references Evanicky and Lee, respectively. Pet., 5. Evanicky is used for the limitations "wherein (a) or (b) is selectable by a user switching the switch" and "wherein the switch has at least two positions." Pet., 53-54. Lee is used for the same limitations. Pet., 101-103. Thus, Petitioner is using Evanicky and Lee for their disclosure of switches. In each case, Petitioner also alleged Bruning (which was already considered by the examiner) teaches the limitation and simply uses Evanicky and Lee for the idea that the switch is "selectable by a user." Pet., 53-54, 101-103. Petitioner's arguments regarding Evanicky and Lee are also similar to those made by the examiner with respect to Lefebvre, where she identified the switches of Lefebvre ¶[0024] as being "selectable by a user switching the switch"

because "it's in a vehicle with a user inside." Ex. 2006 [4-27-2021 Rejection], 2; *see also* §II.C.3, above. The Petition points to Evanicky's "knob or slider" and Lee's "slider" for this limitation. Pet., 53, 102. In both cases, the Petition, like the examiner, is pointing to a switch that is allegedly physically switchable by a user.

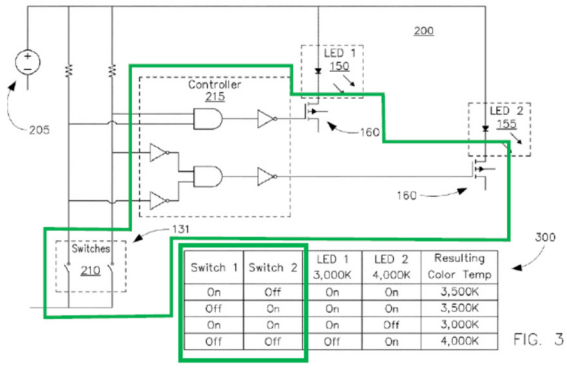
Further, Evanicky and Lee are both highly duplicative of other references considered during prosecution. *see* §II.C.2-3, above. Similar to Bruning and Roberts, both are directed to LEDs for use in LCD displays such as backlighting. *See, for example,* Ex. 1013 [Evanicky], Title, Abstract, Fig. 4; Ex. 1031 [Lee], ¶[0001], ¶[0023], Fig. 5. Thus, Evanicky and Lee are at best cumulative of the art considered and discussed by the examiner during prosecution.

Doheny and Van Winkle: As discussed below, Doheny and Van Winkle do not qualify as prior art to the '705 Patent. Thus, these references should not be considered as part of the *Becton* analysis. However, to the extent the Board deems it necessary to consider these references, both are nearly the same as, and therefore cumulative of, the prior art evaluated during examination. Further, the arguments advanced in this PGR have considerable overlap with those advanced during examination.

Petitioner argues that Doheny anticipates claims 1-2, 5, 7-9, 12, 14-16, and 19 for ground 4. Petitioner similarly argues that Van Winkle renders obvious claims 1-2, 5, 7-9, 12, 14-16, and 19 for ground 5. In both cases the substance of

Petitioner's arguments is much the same as for grounds 2, 3 and 6 involving Bruning. For Doheny, Petitioner relies largely on the schematics of an LED circuit at Doheny Figs. 2-4 (below). *See, e.g.,* Pet., 65-66.

FIG. 2



Switch 1	Switch 2	LED 1 3,000K	LED 2 4,000K	Resulting Color Temp
On	Off	On	On	3,500K
Off	On	On	On	3,500K
On	On	On	Off	3,000K
Off	Off	Off	On	4,000K

FIG. 3

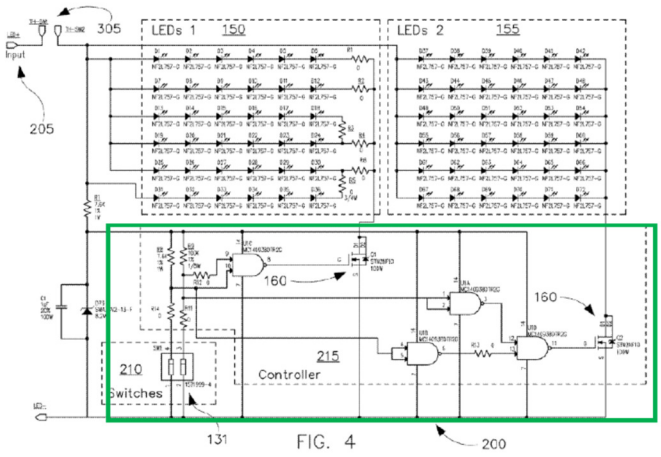


FIG. 4

For Van Winkle, Petitioner relies on similar schematics at Figs. 13 and 23 of Van Winkle (below). *See, e.g.,* Pet., 78-79:

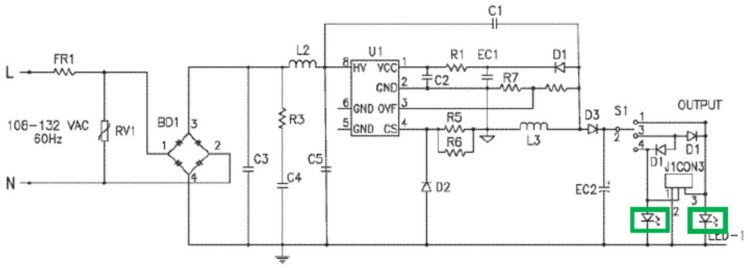


FIG-13

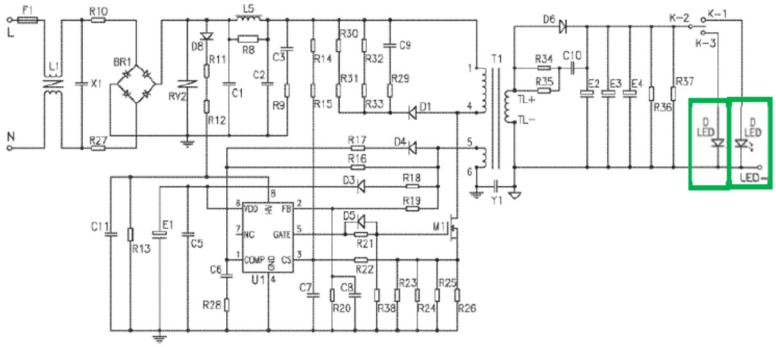


FIG-23

Petitioner relies on the similar schematic at Bruning Fig. 4 (shown below) for its arguments in grounds 2, 3 and 6. *See, e.g.,* Pet., 32.

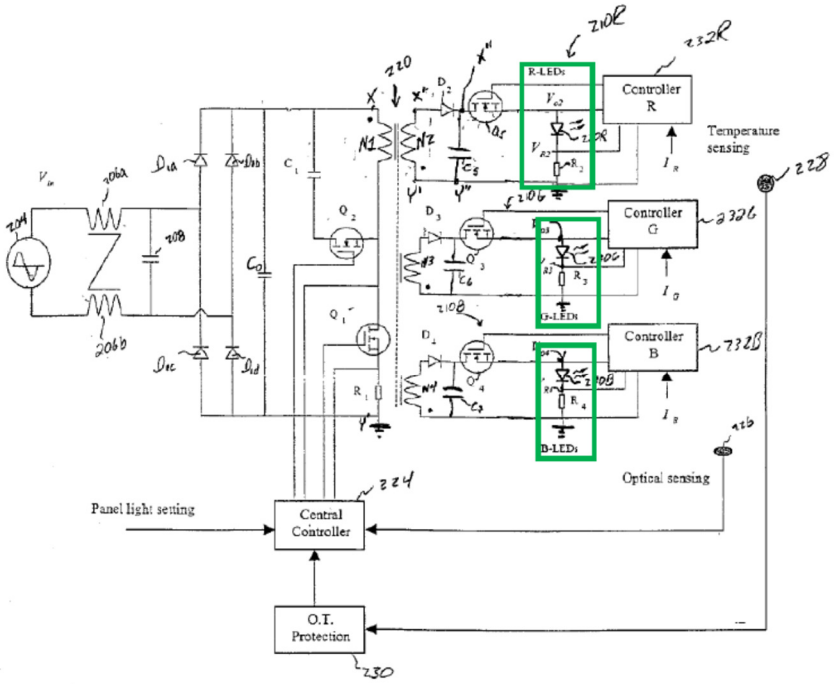


Fig. 4

In each case, Petitioner relies on basic circuit schematics of LED circuit drivers connected to one or more LED circuits, with only minor variations. These schematics are each duplicative and cumulative of Bruning, and, as discussed above in this section, Bruning was not only considered during prosecution but is itself duplicative and cumulative of prior art references discussed during prosecution.

With respect to the "switching" limitations, Petitioner relies on a combination of a "physical switch" combined with various switches and other circuitry in Doheny (Pet., 65-67) and "manually controllable" switch in Van Winkle. These are duplicative of the disclosures relied on in grounds 2, 3 and 6

with Bruning, Evanicky and Lee and duplicative of prior art such as Lefebvre discussed during prosecution. *Supra*, §§II.C.2-3.

Further, Doheny and Van Winkle's technical application is largely cumulative of references discussed (and used as the basis for rejections) during prosecution of the '705 Patent and its related applications. Doheny and Van Winkle are both directed toward an LED light fixture (interchangeable termed a "luminaire" in Doheny.) Fig. 1A of Doheny (below, on the left) shows an embodiment of its luminaire. Ex. 1011 [Doheny], ¶[0013]. Fig. 1 of Van Winkle (below, on the right) shows a nearly identical light fixture from Van Winkle. Ex. 1012 [Van Winkle], ¶[0028].

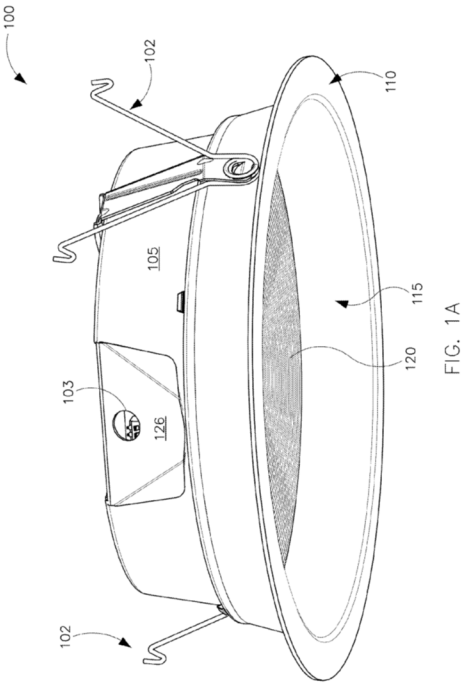
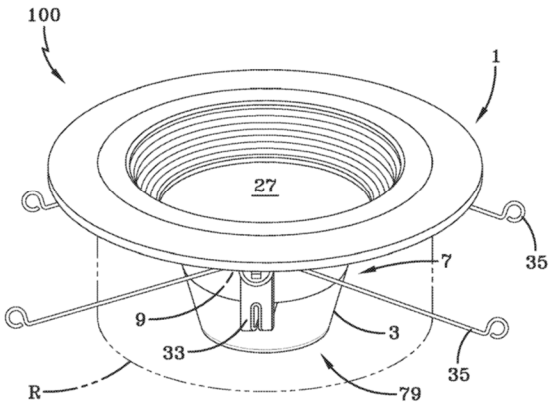


FIG. 1A



FIG−1

During prosecution of the '164 Application, the Board relied on Catalano (US2008/0130288) as part of an August 12, 2019 non-final rejection. Ex. 2019 [8-12-2019 Non-Final Rejection]. *See supra*, §II.C.3, Ex. 2006, [4-27-2021 Rejection]. The Catalano reference is directed to LED bulbs. *See, e.g.,* Ex. 2014 [Catalano], Fig. 1 (below).

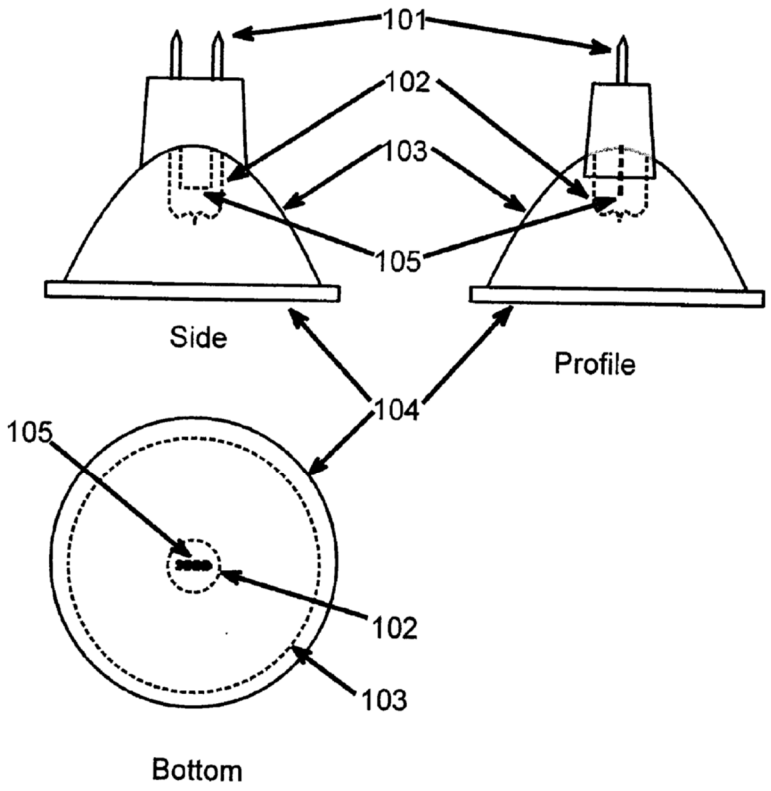


Figure 1

Similarly, the claims of the '164 Application (which issued as the '001 Patent) were rejected on April 25, 2019 as anticipated by Colby. *See supra*, §II.C.3, Ex. 2016, [04/25/2019 Non-Final Rejection]; Ex. 2013 [Colby].Colby, like Catalano, discloses an LED bulb. *See* Ex. 2013 [Colby], Fig. 12 (below):

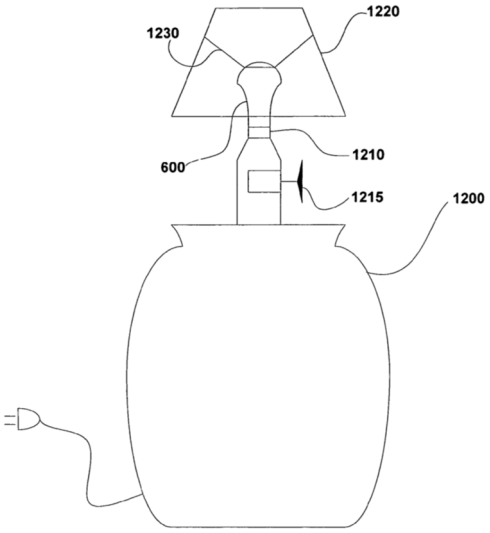


FIG. 12

The primary difference between Catalano and Colby is that in many embodiments of Doheny and Van Winkle, the LED is part of the lighting fixture, whereas Catalano and Colby are directed towards bulbs that are placed into existing fixtures. In other words, the difference is that the controllers and drive circuitry are placed within the bulbs themselves in Catalano and Colby, whereas the controllers and drive circuitry of Doheny and Van Winkle are part of a fixture, and the LEDs are permanently attached to those fixtures (and therefore not

replaceable.) Thus, the Doheny and Van Winkle references are both similar to, and cumulative of, the Catalano and Colby references discussed during prosecution.

The asserted references in this PGR are the same or nearly the same as the prior art involved during examination, are cumulative of the prior art evaluated during examination, and the arguments considered during examination largely overlap with those advanced in the Petition. *Becton* factors a, b, and d therefore favor discretionary denial.

2. *Becton* Factors (c), (e) and (f)

Factor (c) is the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection. As discussed above, the examiner reviewed and considered Bruning during prosecution. §II.C.2, above. While the examiner did not discuss Bruning, she did issue a rejection over the similar prior art Lefebvre and Allen that applicant subsequently successfully traversed, and the applicant in parent applications successfully overcame prior art including Roberts, Catalano, and Colby that is largely duplicative of Bruning. As discussed above, the other asserted art is duplicative of Bruning, Lefebvre and Allen, and the Doheny and Van Winkle references do not qualify as prior art. Accordingly, Factor (c) favors discretionary denial.

Factor (e) is whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art. Petitioner's only argument here is that "[t]he examiner erred by failing to locate Evanicky, Doheny, Van Winkle, and Lee and not considering the Board's D.I. in PGR2022-00009." Pet., 10. Failing to find every possible piece of potentially relevant prior art to a patent is not an "error." Few, if any, examiners have ever found every relevant piece of prior art to an application, and here, the examiner performed a thorough search, citing 12 full pages of references comprising hundreds of different patents and publications. Ex. 1001 ['705 Patent], 2-13. Further, as discussed above, many of the cited prior art references are duplicative of Bruning, Evanicky, Lee, Doheny and Van Winkle, and would add nothing to the examiner's thorough evaluation of patentability. Finally, Petitioner faults the examiner for "not considering the Board's D.I. in PGR2022-00009" (Pet., 10), but the Board's D.I. in PGR2022-00009 was a preliminary finding that issued May 25, 2022—***almost two months after the '705 Patent issued*** on April 5, 2022. Ex. 1001 ['705 Patent]. The examiner did not err by failing to consider a document that did not yet exist.

Petitioner argues "the reason why the examiner overlooked Bruning is unknown." Pet., 11. As discussed above, the examiner did not overlook Bruning but instead reviewed and considered Bruning during examination. Ex. 2040 [12-18-2021 signed IDS]. The examiner likely did not discuss Bruning because

Bruning was cumulative and duplicative of many other references the examiner had already reviewed and discussed, including Lefebvre and Allen. This factor favors PO because Petitioner has not identified any actual error in the examiner's evaluation.

Factor (f) is the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments. There 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. Indeed, the fact (as discussed below) that Doheny and Van Winkle are not prior art to the challenged claims strongly weighs in favor of not considering those grounds.

Accordingly, the Board should decline institution pursuant to 35 U.S.C. § 325(d).

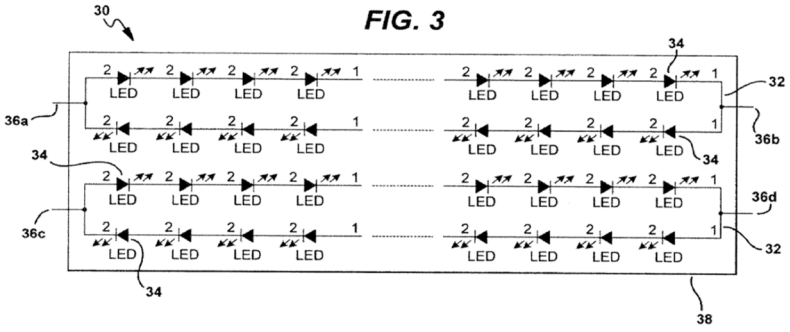
VI. DOHENY AND VAN WINKLE ARE NOT PRIOR ART

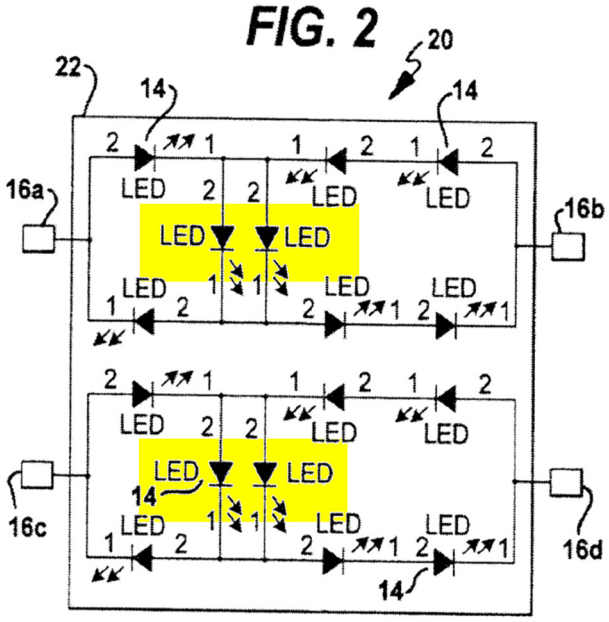
Doheny and Van Winkle are the sole references used in the Petition for Grounds 4 and 5, respectively. Pet., 5. Doheny was published on February 1, 2018 and filed on October 9, 2017. Pet., 4; Ex. 1011 [Doheny]. Van Winkle was published on July 19, 2018 and filed on Jan. 15, 2018. Ex. 1012 [Van Winkle]. Neither is prior art because the '705 Patent is entitled to a priority date going back at least to May 28, 2010.

As discussed above in §II.C.1, the '705 Patent traces its priority back to the '771 Provisional, filed on October 6, 2007. Petitioner acknowledges this. Pet., 23 ("A [POSITA] as of October 6, 2007 (earliest listed priority date) … "). The Petition argues that the independent claims of the '705 Patent incorporate "new matter" and are therefore not entitled to any priority date prior to February 22, 2021. Pet., 13. But as discussed above, Petitioner's argument is incorrect because it ignores clear and repeated disclosures in the priority chain to the contrary. *See supra*, §IV.A.3. Petitioner raises several other written description challenges, but none of those challenges are relevant to this analysis because they do not challenge any claims at issue in grounds 4 and 5 of the Petition. *See* MPEP 2152.01 ("the effective filing date of a claimed invention is determined on a claim-by-claim basis…").

The '705 Patent is the latest in a chain of continuations going back to the '539 Patent, which was filed on May 28, 2010. *See* §II.C.1, *supra*. The '705 Patent, the '539 Patent, and every intervening patent and application not only claim priority to, but also expressly incorporate by reference, each previous application going back to the '215 Provisional, filed on May 28, 2009, and the '771 Provisional, filed on October 6, 2007. *See* §II.C.1, *supra*. Thus, these patents have the same disclosure (and therefore continuity of priority) stretching back at least until May 28, 2010.

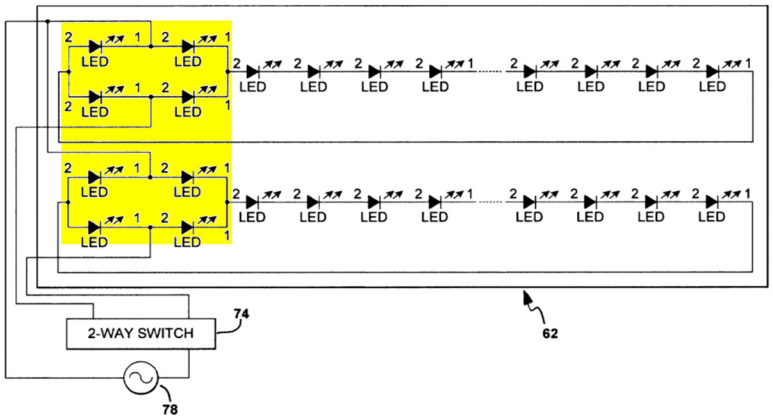
Grounds 4 and 5 challenge claims 1-2, 5, 7-9, 12, 14-16, and 19. Pet., 5. Using the ’539 Patent and the ’215 and ’771 Provisionals (which are expressly incorporated into the ’539 Patent (*see* Ex. 2043 [’539 Patent], 1:5-15)), the exemplary citations below demonstrate that there is clear written description support for each limitation of the claims challenged in grounds 4 and 5 dating back to at least May 28, 2010.

’705 Patent Claims	**’539 Patent Support**
1.pre: An LED lighting system comprising:	’539 Patent, Title (“Multi-Voltage and Multi-Brightness LED Lighting Devices And Methods Of Using Same”).
1.a: a first operating LED circuit and at least one additional LED circuit,	*See, e.g.,* ’539 Patent, Fig. 3 (disclosing two LED circuits):  FIG. 3 *See also* ’539 Patent, Figs. 1-2, 4-9, 11-12.

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	*See* 1.a, above. '539 Patent Fig. 3 shows multiple LEDs 2 connected in series with one another. '539 Patent Fig. 2, for example, shows multiple LEDs 2 in parallel with one another. 
1.c: the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;	*See, e.g.,* '215 Provisional, [Para 16] ("A package in certain applications may preferably also include … phosphor, nano-chrystals [sic] or other light changing or enhancing substances … Such packages can be of varied make up and can be combined with each other to create desired systems …"), [Para 21] ("Individual LED circuits being the same or different colors … may be driven from a single source LED driver.").

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,	*See, e.g.,* '539 Patent, 2:66-3:8 ("This 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… based on a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit."); 3:33-35 ("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"); Figs. 7 and 9 (disclosing switches).
1.e: wherein (a) or (b) is selectable by a user switching the switch; and	*See, e.g.,* '539 Patent, Abstract ("the drive voltage level … selectability … may be selected by the LED package user"); 3:17-19 ("allowing the voltage level or brightness level to be selected at the LED package user").

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,	*See, e.g.,* '539 Patent, 1:35-40 ("The present invention specifically relates to … light emitting diode circuits, single chips, packages and lamps 'devices' for direct AC voltage power source operation, bridge rectified AC voltage power source operation or constant DC voltage power source operation"), 1:43-45 ("LEDs are intrinsically DC devices that … historically have been driven by DC voltage sources"), 1:50-51 ("With proper design considerations LEDs may be driven more efficiently with direct AC or rectified AC …"), 2:60-66, 9:29-34 ("The full wave LED bridge circuit has electrical contacts 86 to provide for AC voltage input connectivity and DC voltage output connectivity."), Fig. 10. Rectified AC is a driver with AC input and DC output. *See also* '539 Patent, 4:20-23 ("LED circuit is designed to be driven with … AC or DC"), 12:6-14; '771 Provisional, [Para 5] ("This type of LED light string converts … 110 VAC, to a low voltage, rectified to nearly DC input.").

	Similarly, '539 Patent Fig. 9 shows LED circuits with bridge rectifiers (highlighted in yellow) placed between the LEDs and the AC power source: *FIG. 9*  The bridge rectifiers serve as drivers converting the AC input 78 to a DC output. *See* '539 Patent, 9:8-20.
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.	*See, e.g.,* '215 Provisional, [Para 22] ("The LED circuit driver may be coupled to a dimmer switch that regulates voltage or frequency … the LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits."). Because the switch increases (or decreases) the voltage of the LED circuit driver output to the LED circuit inputs, it is connected between the DC voltage output

	of the driver and the LED circuits. *See also* §IV.A.3, *supra*.
2. The LED lighting system of claim 1, wherein the switch has at least two positions.	*See, e.g.,* '539 Patent 3:33-39 ("This would allow LED lamps to switch to higher brightness levels just like 2-way or 3-way incandescent lamps do today"), Fig. 9 (showing "2-way switch"); '215 Provisional, [Para 13] ("The multi-brightness single chip AC LED operates on a·switch having at least two positions each of which is connected to at least one circuit …").
3. The LED lighting system of claim 1, 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.	*See, e.g.,* '539 Patent, 2:60-66 ("It would further be advantageous to provide multiple voltage level … light emitting LED circuits, chips, packages and lamps '"multi-voltage and/or multi-brightness LED devices' 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."); 2:66-3:8 ("This invention comprises circuits and devices that can be driven 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 … .”).
4. The LED lighting system of claim 1, wherein the switch, the first operating LED circuit, and the at least one additional LED circuit are mounted on a single insulating substrate.	*See* '539 Patent, 2:6-9 (“The LED based solid-state light emitting device or lamp is built upon an electrically insulating layer that has been formed onto a support surface of a substrate”), 2:38-41 (“The electrical insulation between small LEDs within a single-chip is achieved by etching light emitting materials into the insulating substrate…”), 4:15-19 (“at least two single voltage series LED circuits, … are formed … on a substrate providing a multi-voltage AC or DC operable LED device.”), 5:1-6 (“at least two single voltage LED circuits are formed … on a substrate, and at least one bridge circuit made of LEDs is formed on the same single chip or substrate providing a multi-voltage … LED device for direct DC power operation.”); '215 Provisional, ¶¶[0013] (“The

	multi-brightness single chip AC LED operates on a ·switch"), [0015] ("Preferred embodiments of a package may include an insulating substrate whereon the LEDs, capacitors and or resistors are formed or mounted. … The substrate may be such as sapphire, silicon carbide, gallium nitride, ceramics, printed circuit board material, or other materials for hosting circuit components."). Switches and LEDs are circuit components. *See also* '215 Provisional, ¶¶[0012] ("Each multi-chip multi voltage AC LED package can be mounted onto a printed circuit board assembly and/or other substrate and electrically configured to be driven at the first or second forward drive voltage level…"), [0045] (same).
5. The LED lighting system of claim 1, wherein the switching of the switch changes	*See, e.g.,* '539 Patent 3:33-38 ("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 …"). *See also* '539

light output of the LED lighting device.	Patent 6:50-55, 8:60-66. Increasing or decreasing brightness changes light output.
6. The LED lighting system of claim 1, wherein the LED driver is configured to cause the DC voltage output to have a lower voltage than the AC voltage power source.	*See* claim 1.f, above; '539 Patent, 9:29-34 ("The full wave LED bridge circuit has electrical contacts 86 to provide for AC voltage input connectivity and DC voltage output connectivity."), Figs. 9-10. The DC voltage output of a bridge rectifier is necessarily lower than the AC voltage input because there is a voltage drop across the diodes of the rectifier. *See also* '215 Provisional, ¶[0018] ("The LED circuit driver output voltage [ ] delivered to the LED circuit may be high or lower than mains power voltage [ ] by suing an LED circuit inverter driver."), [0022] (describing "LED circuit driver" that "may have integrated circuitry that allows for adjustability of the otherwise relatively fixed voltage … output" thus indicating the voltage output can be higher or lower than the voltage input.)
7. The LED lighting system of claim 1,	*See, e.g.,* '539 Patent, 2:66-3:8 ("This invention comprises circuits and devices that can be driven with

further comprising a driver electrically coupled to the switch and at least one of the first operating LED circuit or the at least one additional LED circuit.	more than one AC or DC forward voltage 'multi-voltage' at 6V or greater … based on a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit."); '215 Provisional, [Para 22] ("The LED circuit driver may be coupled to a dimmer switch that regulates voltage or frequency … the LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits."). The driver is part of the same circuit, and therefore electrically coupled to, the switch and the LED circuits.
8.pre: An LED lighting system comprising:	*See* claim 1.pre.
8.a: a first operating LED circuit and at least one additional LED circuit,	*See* claim 1.a.
8.b: at least one of the first operating LED	*See* claim 1.b.

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;	*See* claim 1.c.
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	*See* claim 1.d.

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	*See* claim 1.e.
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	*See* claim 1.f.

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.	*See* claim 1.g.
9. The LED lighting system of claim 8, wherein the switch has at least two positions.	*See* claim 2, above.
10. The LED lighting system of claim 8, wherein the switching of the switch provides	*See* claim 3, above.

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.	
11. The LED lighting system of claim 8, wherein the switch, the first operating LED circuit, and the at least one additional LED circuit are mounted on a single insulating substrate.	*See* claim 4, above.
12. The LED lighting system of claim 8, wherein the switching of the switch changes	*See* claim 5, above.

light output of the LED lighting device.	
13. The LED lighting system of claim 8, wherein the LED driver is configured to cause the DC voltage output to have a lower voltage than the AC voltage power source.	*See* claim 6, above.
14. The LED lighting system of claim 8, further comprising a driver electrically coupled to the switch and at least one of the first operating LED circuit or the at least	*See* claim 7, above.

one additional LED circuit.	
15.pre: An LED lighting system comprising:	*See* 1.pre, above
15.a: a first operating LED circuit and at least one additional LED circuit,	*See* 1.a, above.
15.b: the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;	*See* 1.c, above.
15.c: a switch capable of at least one of:	*See* 1.d, above.

(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	*See* 1.e, above.
15.e: an LED driver including an input configured to connect to an AC voltage power source, the LED	*See* 1.f, above.

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.	*See* 1.g, above.
16. The LED lighting system of claim 15, wherein the switch has at least two positions.	*See* claim 2, above.

17. The LED lighting system of claim 15, 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.	*See* claim 3, above.
18. The LED lighting system of claim 15, wherein the switch, the first operating LED circuit, and the at least one additional LED circuit are mounted on a single insulating substrate.	*See* claim 4, above.

19. The LED lighting system of claim 15, wherein the switching of the switch changes light output of the LED lighting device.	*See* claim 5, above.
20. The LED lighting system of claim 15, wherein the LED driver is configured to cause the DC voltage output to have a lower voltage than the AC voltage power source.	*See* claim 6, above.

Because each limitation of each claim challenged in grounds 4 and 5 is supported by at least the ’539 Patent and ’215 and ’771 Provisionals, and because these documents are incorporated by reference in each subsequent application (up to and including the ’705 Patent), Doheny and Van Winkle do not qualify as prior art to any claim challenged in grounds 4 and 5. Accordingly, grounds 4 and 5 fail.

VII. GROUND 1: CLAIMS 3, 10 AND 17 SATISFY 35 U.S.C. § 112

A. Claims 3, 10, and 17 Are Possible

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 ['705 Patent], Claims 3, 10, 17.

The Petition argues that claims 3, 10, and 17 are invalid under 35 U.S.C. § 112 for indefiniteness, lack of written description and enablement because Petitioner's first proposed construction of "forward voltage" ("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.") renders these claims impossible to perform. Pet., 28-30. In other words, Petitioner proposes a nonsensical construction, and then argues that the claims are impossible if the nonsensical construction is applied. *See, e.g., Wasica,* 853 F.3d at 1288 n.10 (Fed. Cir. 2017) ("It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous.").

As discussed above in §III.A.2, Petitioner's first proposed construction is incorrect. Limiting claims 3, 10, and 17 to a single forward voltage when the claims require "two different" forward voltages, thereby disregarding the express disclosure of both the claims and specification as well as the well-understood

reality of how LEDs operate, would be clear legal error. Further, Petitioner does not (and cannot) dispute that under either the correct construction for "forward voltage" of "the operating voltage for the claimed LED circuit" or Petitioner's second (incorrect) proposed construction, claims 3, 10, and 17 are possible. Pet., 28-30. This alone disposes of ground 1.

Even under Petitioner's first (incorrect) construction, the claim recites permissible features. Petitioner's first proposed construction 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." Pet., 24. 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." Even under Petitioner's flawed argument, there does not appear to be any dispute about the above interpretation.

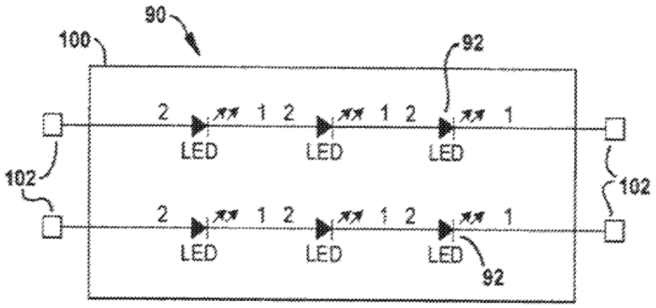
Instead, Petitioner's argument rests on the incorrect assumption that each LED circuit can have only a single forward voltage. *See* Pet., 29 ("Because each circuit has only a single 'forward voltage,' no switch can provide 'at least two different' forward voltages to either circuit."). This assumption directly contradicts the express teachings of the '705 Patent. For example, claim 1 (from which claim 3 depends) recites a switch capable of "switching a voltage level input" to the LED circuits. Thus, the claim itself requires an LED circuit to have more than one

voltage level option that can be delivered to the LED circuit and are selectable by a switch.

Further, the specification clearly and repeatedly teaches that LED circuits may have more than one voltage level. *See, e.g.,* Ex. 1001 ['705 Patent], 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… ."), 11:46-49 (describing Fig. 9 as a "multi-voltage … LED device.") *See also* §§IV.A.3-4, above (discussing additional examples from the specification of an LED circuit receiving multiple voltages). In one example, the '705 Patent explains that this multiple voltage level functionality "is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration." Ex. 1001 ['705 Patent], 3:15-23. The 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." Ex. 1001 ['705 Patent], 3:15-23.

The '705 Patent describes numerous embodiments with similar multi-voltage functionality. For example, Fig. 12 of the '705 Patent (below) illustrates one multi-voltage configuration:

FIG. 12



The ’705 Patent explains (consistent with other embodiments) that “[t]he LED package 100 has electrical contacts 102 that are used to wire the at least two series LEDs circuit [92] into a series circuit, a parallel circuit or in anti-parallel to form an AC LED circuit all within a single LED package.” Ex. 1001 [’705 Patent], 12:10-14. *See also id.*, 8:10-15. In other words, the ’705 Patent teaches connecting LED circuits in series and parallel configurations to form new circuits. Each of these new circuits may (depending on the configuration) have a different forward voltage.

Putting these teachings in the context of claim 3, when the LED circuits of Fig. 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. The inventor clearly LED

circuit may have different forward voltages depending on whether the LEDs in the circuit are connected in series or parallel. Accordingly, claims 3, 10 and 17 are possible.

VIII. CONCLUSION

For the foregoing reasons, the Board should not institute this PGR.

Respectfully submitted,

/Stephen P. McBride/
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CARMICHAEL IP, PLLC

Date: May 8, 2023

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner's Preliminary Response (the "POPR") consists of 18,349 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 18,700 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/Stephen McBride/

Date: May 8, 2023

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served by electronic service, by agreement between the parties, on the date below:

PATENT OWNER'S PRELIMINARY RESPONSE

EXHIBITS 2001-2044

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