

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HOME DEPOT USA, INC.,
Petitioner,

v.

LYNK LABS, INC.,
Patent Owner.

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

PATENT OWNER'S RESPONSE PURSUANT TO 37 C.F.R. § 42.120

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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)
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2024	July 10, 2018 Response to Office Action (U.S. Pat. App. No. 15/685,429)
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2033	May 16, 2013 Non-Final Rejection (U.S. Pat. App. No. 13/322,796)
2034	September 16, 2013 Response to Office Action (U.S. Pat. App. No. 13/322,796)
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2036	Datasheet for Samsung High Power LED LH502C, Rev. 2.2, May 4, 2022. (“Samsung Datasheet”)
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2038	<i>Printout from https://www.baldengineer.com/led-basics.html</i> (last accessed August 12, 2022). (“Bald Engineer”)
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2047	Deposition Transcript of Dr. Dean Neikirk (October 5, 2023)
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2049	US Pat. No. 9,750,098 (“’098 Patent”)
2050	US Pat. No. 10,271,393 (“’393 Patent”)
2051	<i>Excerpts from</i> All About Circuits, Tony R. Kuphaldt, 2001, available at https://www.allaboutcircuits.com/textbook/semiconductors/chpt3/introduction-to-diodes-and-rectifiers/ (last accessed August 12, 2022) (“All About Circuits”)
2052	<i>Excerpts from</i> Introduction to Light Emitting Diode Technology and Applications, Gilbert Held (CRC Press, 2009)
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I. INTRODUCTION

U.S. Patent No. 11,297,705 (the “’705 Patent”) is directed to a “multi-voltage and multi-brightness LED lighting devices and methods of using same.” EX1001 [’705 Patent], Title. Petitioner Home Depot USA, Inc. (“Home Depot” or “Petitioner”) has petitioned for review of six grounds of alleged unpatentability against claims 1-3, 5, 7-10, 12, 14-17, and 19 of the ’705 Patent.

As discussed below, the claims of the ’705 Patent are not impossible to perform and are supported by pre-AIA applications in a chain of priority. Petitioner’s arguments to the contrary rely on interpreting the ’705 Patent in manners that are not consistent with the explicit text of the claims and specification. Thus, the ’705 Patent is ineligible for post-grant review. Further, the Bruning grounds do not disclose a switch that is both (1) electrically connected between an LED driver and the LED circuits and (2) selectable by a user, and the Doheny and Van Winkle references do not qualify as prior art. Further, as demonstrated below, this PGR is not controlled by the outcome of PGR2022-00009 because the record and arguments are different.

For the reasons set forth below, the ’705 Patent is ineligible for post-grant review and the Petition therefore fails to demonstrate by a preponderance of the evidence that the challenged claims are unpatentable. Accordingly, the Board should issue a Final Written Decision holding all challenged claims patentable.

II. OVERVIEW OF THE '705 PATENT AND THE STATE OF THE ART

A. Technical Background

The general field of the '705 Patent is LED lighting, and in particular “multi-brightness and multi-voltage LED lighting devices.” EX1001 ['705 Patent], Title. The '705 Patent “specifically relates to multiple voltage level and multiple brightness 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.” EX1001 ['705 Patent], 1:43-49. EX2045 [Ducharme Decl.], ¶¶36-37.

B. Challenged Claims

The Petition has challenged 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 an LED lighting device. 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 such that at least one of the circuits emits a different color of light than the other LED circuits, where the LED lighting device contains a switch positioned between the output of an LED driver and the LED circuits that is configured to allow a user to either switch from different voltage level inputs to the LED circuits or switch the LED circuits on or off. The switch is electrically

connected between a DC voltage output of a driver and at least one of the LED circuits.

The challenged dependent claims recite further improvements on LED lighting devices, including providing one of at least two different DC forward voltages to the LED circuits, using switches that have different positions that are selectable by a user to change the light output of the LED circuit, and using at least two different AC voltage power sources.

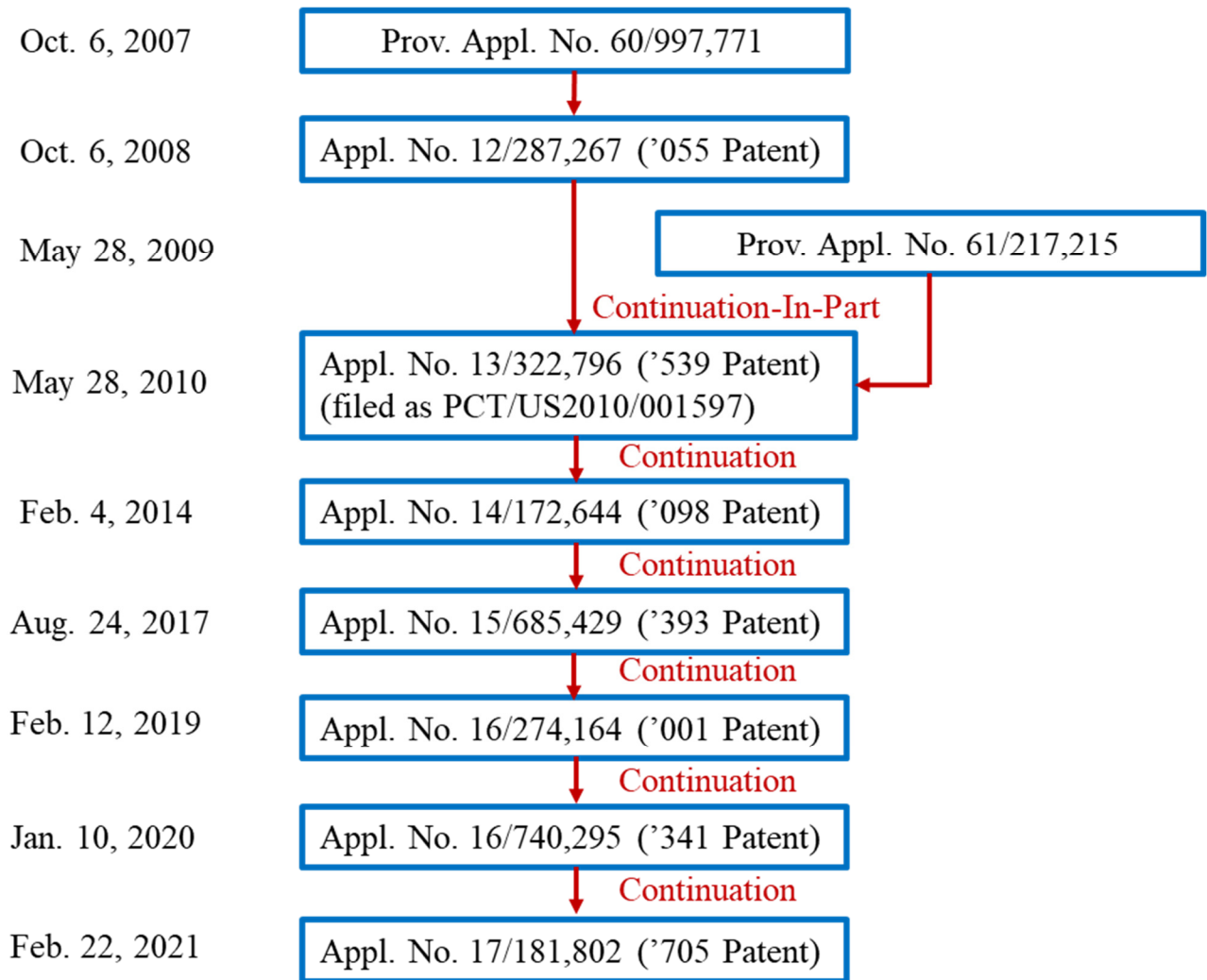
The grounds of the petition are as follows:

- Ground 1: Claims 3, 10, and 17 are invalid under section 112.
- Ground 2: Claims 15, 17, and 19 are anticipated under Section 102.
- Ground 3: Claims 1, 3, 5, 7-10, 12, 14-17, and 19 are obvious under Section 103 over Bruning (EX1004) in view of Evanicky (EX1013).
- Ground 4: Claims 1-2, 5, 7-9, 12, 14-16, and 19 are anticipated under Section 102 by Doheny (EX1011).
- Ground 5: Claims 1-2, 5, 7-9, 12, 14-16, and 19 are obvious under Section 103 over Van Winkle (EX1012).
- Ground 6: Claims 1-3, 5, 7-10, 12, 14-17, and 19 are obvious under Section 103 over Bruning (EX1004) in view of Lee (EX1031).

See Pet., Paper 1, 4-5. Claims 4, 6, 11, 18 and 20 of the '705 Patent are not challenged by any ground and are therefore not subject to this PGR.

C. Prosecution History

The '705 Patent was filed on February 22, 2021 as U.S. Pat. Appl. No. 17/181,802 and issued on April 5, 2022. EX1001 ['705 Patent]. It has a chain of priority dating back through several continuation applications and one continuation-in-part application to provisional application Nos. 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 Co.*, 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. EX1001 ['705 Patent], 1:5-24.

Each of these continuation applications in turn incorporates by reference every prior patent and application in the chain. EX1009 ['429 Application], ¶[0001];

EX1010 ['644 Application], ¶[0001]; EX1016 ['796 Application], ¶[0001];

EX1017 ['267 Application], ¶[0001]; EX1018 ['597 PCT], [Para 1]; EX1019 ['164 Application], ¶[0001]; EX2001 ['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, expressly to include several paragraphs from the '215 Provisional Application (EXS2002 ['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.* EX1001 ['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. EX2045 [Ducharme Decl.], ¶40.

D. Level of Ordinary Skill

The Petition and Petitioner's expert (Dr. Neikirk) have asserted that a person of ordinary skill in the art as of the time of the '705 Patent 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, and that an increase in experience could compensate for less education. Pet., 10-11, EX1002 [Neikirk

Decl.], ¶46. For purposes of institution, the Institution Decision adopted Petitioner’s definition. Paper 8, 11. Patent Owner (“PO”) does not dispute that definition for purposes of this Patent Owner Response (“POR”). EX2045 [Ducharme Decl.], ¶41.

E. Prior Art

1. Bruning (EX1004)

U.S. Pat. App. Pub. No. 2002/0070914 (“Bruning”) was published June 13, 2002. Bruning teaches a back light for LCD displays. EX1004 [Bruning], ¶[0002] (“A back light is typically used to illuminate an LCD panel for information display.”). EX2045 [Ducharme Decl.], ¶¶42-44.

2. Lee (EX1031)

U.S. Pat. App. Pub. No. 2006/0022999 (“Lee”) was published February 2, 2006. Lee is directed to setting the color point of an LED light. Ex1031 [Lee], Title; EX2045 [Ducharme Decl.], ¶¶45-51.

3. Evanicky (EX1013)

U.S. Pat. App. Pub. No. 2002/0163529 (“Evanicky”) was published November 7, 2002. Evanicky is directed to color balancing within an LCD display unit. EX1013 [Evanicky], Title, Abstract; EX2045 [Ducharme Decl.], ¶52-55.

4. Doheny (EX1011)

U.S. Pat. App. Pub. No. 2018/0035510 (“Doheny”) was published February 1, 2018 with a provisional application filed February 19, 2016. Doheny is directed to a luminaire with a lumen control module that can be configured to emit different brightness levels of the luminaire. EX1011 [Doheny], Abstract; EX2045 [Ducharme Decl.], ¶¶56-59.

5. Van Winkle (EX1012)

U.S. Pat. App. Pub. No. 2018/0206305 (“Van Winkle”) was published July 19, 2018 with a provisional application filed on January 13, 2017. Van Winkle is directed to an LED light fixture that allows for manual control of color temperature. EX1012 [Van Winkle], Title, Abstract; EX2045 [Ducharme Decl.], ¶¶60-64.

III. CLAIM CONSTRUCTION

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. EX1001 [’705 Patent], claims 3, 10 and 17. Each of these claims is substantially similar. Claim 3 is representative and 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.” EX1001 [’705 Patent], claim 3. This mirrors PO’s construction. PO’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 recite the “forward voltage” to be a range of voltages. EX1001 [’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 different voltage levels delivered to the LED circuits that are selectable with a switch.

The specification supports PO’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.” EX1001, [’705 Patent], Title. The specification repeatedly indicates that 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 discloses the use of multiple voltages within LED lighting devices to change the brightness of the LED circuit.

Likewise, the specification repeatedly discloses that the forward voltage “drives” the LED circuit. *See, e.g.*, EX1001 [’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 or brightness. When the forward voltage is not within the operating range, the forward voltage cannot drive the LED circuit. EX2045 [Ducharme Decl.], ¶¶71-72.

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 then bootstraps this proposed construction to further argue that the construction means the forward voltage in claims 3, 10, and 17 must be a single, predetermined voltage. Pet. 28-30. Both positions are 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 *recite “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.,* EX1001 [’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 multi-voltage ... LED circuit. ... Each multi-voltage ... LED circuit ... comprises at least two single voltage AC LED circuits.”). Interpreting the forward voltage to be one fixed minimum voltage

would be contrary to the purpose and disclosure of the '705 Patent (which is to provide multiple selectable voltage levels to LED circuits and multiple selectable brightness levels to be emitted from LED circuits). Additionally, interpreting the forward voltage to be one fixed, minimum value excludes numerous embodiments of the '705 Patent discussed above, including the embodiments covering the stated purpose of the patent. *See, e.g.*, EX1001 ['705 Patent], Title, Abstract, 3:15-17, 4:40-43, 5:3-6, 5:47-54. *See, e.g., Nobel Biocare Services AG v. Intradent 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. The term “LED circuit” is broad enough to include LED circuits with multiple forward voltages. 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.” EX1001 ['705 Patent], 3:43-45. As discussed in the preceding paragraph, multiple embodiments discuss providing multiple voltages to a single LED circuit to adjust, for example, lighting brightness. EX2045 [Ducharme Decl.], ¶¶78-79.

Even in the non-limiting embodiments of the '705 Patent that discuss a “single voltage” LED circuit, the '705 Patent discusses that two single voltage LED circuits may be combined to create a multi-voltage LED circuit. *See, e.g.*, EX1001 [’705 Patent], 4:16-22 (“According to another aspect of the invention, each multi-voltage AC LED device would 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.”); 4:28-32 (“at least two single voltage series LED circuits, ... are formed ... providing a multi-voltage AC or DC operable LED device.”); 6:47-51 (“multiple individual discrete LED chips are used to form at least one multi-voltage ... LED circuit. ... Each multi-voltage ... LED circuit ... comprises at least two single voltage AC LED circuits.”). *See, e.g.*, EX2045 [Ducharme Decl.], ¶80.

“One of the cardinal sins of patent law [is] reading a limitation from the written description into the claims.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005) (citations and quotations omitted). Petitioner’s arguments attempting to limit the claim term “LED circuits” to single voltage LED circuits does just that. 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.

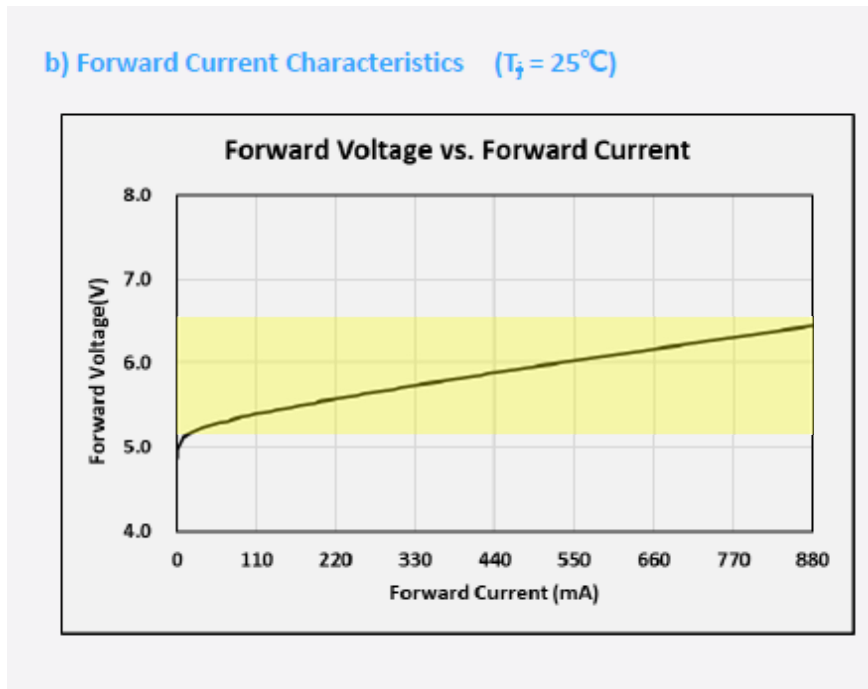
ii. Petitioner's construction is contradicted by the extrinsic record

The extrinsic record underscores that Petitioner's proposed construction is nonsensical in the context of the '705 Patent claims. 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. EX2036 [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. EX2036 [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 multiple forward voltages between 5.9 and 6.3V, not one single forward voltage and not just a minimum voltage. EX2045 [Ducharme Decl.], ¶81.

b) Electro-optical Characteristics ($I_F = 640 \text{ mA}$, $T_J = 25^\circ\text{C}$)

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

Similarly, page 10 of EX2036 [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. EX2036 [Samsung Datasheet], 10. Again, this demonstrates there is a range of multiple potential forward voltages for the Samsung LED depending on the amount of current provided. EX2045 [Ducharme Decl.], ¶¶82; EX2047 [Neikirk Dep. Tr.], 79:24-80:5 (“[Petitioner’s construction] would be one value. A single voltage. This graph [in EX2036] illustrates that you can apply a whole range of voltages in the forward direction.”).



Other portions of the datasheet are clear that the amount of current determines a luminous flux for the LED (which determines the perceived brightness of 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. EX2045 [Ducharme Decl.], ¶83.

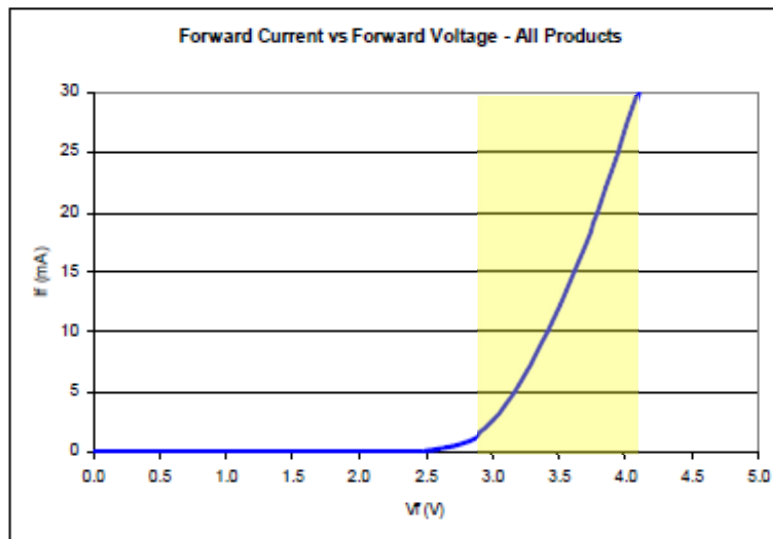
In another example, EX2037 [Cree Datasheet] is a publicly available datasheet from 2003 for Cree MegaBright LEDs in the CxxxMB290-S0100 series. As shown at page 2 of EX2037 [Cree Datasheet] (annotated below), the typical forward voltages for these LEDs can range from a minimum of 3.0V to a maximum of 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. EX2045 [Ducharme Decl.], ¶84.

<i>Typical Electrical/Optical Characteristics at $T_A = 25^{\circ}\text{C}$, $I_f = 20\text{mA}$</i> ^{Note 3}							
Part Number	Forward Voltage (V_f , V)			Reverse Current [$I_r(V_r=5\text{V})$, 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.) EX2037 [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. EX2037 [Cree Datasheet], 4. Again, the forward voltage is not limited to a single minimum voltage. EX2045 [Ducharme Decl.], ¶85.

Characteristic Curves



Other contemporary LED datasheets had similar tables and disclosures showing ranges of forward voltages. *See, e.g.*, EX2018 [Everlight Datasheet], 3-4; EX2042 [Lite-On Datasheet], 4-5. Thus, an LED's forward voltage is not limited to a single minimum forward voltage, as proposed by Petitioner. EX2045 [Ducharme Decl.], ¶86.

Indeed, Petitioner's expert admits that Petitioner's proposed construction renders Petitioner's prior art impossible. EX2047 [Neikirk Dep. Tr.], 43:15-23 ("Q. ... it is your opinion that Bruning teaches at least two different DC forward voltages being provided to LED circuits. Correct? A. Well, no. To be clear, I believe that providing two different forward voltages under the proper construction is impossible... If it's impossible, then clearly, Bruning can't do it either."), 44:7-10 ("If it's impossible, then no one can teach it, so Bruning wouldn't teach it either."). Dr. Neikirk's inability to interpret Bruning consistently with his own proposed construction further highlights that Petitioner's construction is divorced from the plain and ordinary meaning of the claim term and the reality of how LEDs operate.

iii. The Petition fails 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 to provide an overly 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, (as well as the extrinsic record), directly contradict Petitioner’s proposed construction. *See supra*, §III.A.1. 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, 1370 (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.”).

“There is no ‘clear and unmistakable’ disclaimer” where “a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term.” *01 Communique Lab'y, Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1297 (Fed. Cir. 2012). Further, prosecution history statements stripped “from their context provid[e] an incomplete and ultimately inaccurate characterization” of disclaimer. *Opticurrent, LLC v. Power Integrations, Inc.*, No. 2021-1712, 2022 WL 539158, at *5 (Fed. Cir. Feb. 23, 2022). In addition, “clearly describing a particular claim term to overcome [a] rejection is not the same as clearly disavowing claim scope.” *Continental Circuits, LLC v. Intel Corp.*, 915 F.3d 788, 798–99 (Fed. Cir. 2019)

Petitioner cannot meet this threshold because the statement from the grandfather '164 Application discusses 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 '164 Application makes clear that the Applicant did not intend to disclaim any interpretation of forward voltage. EX2045 [Ducharme Decl.], ¶89. There, the Examiner had rejected claim 1 of the '164 Application over the prior art reference Colby. EX1023, 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.” EX1023, 9. This limitation is missing from, and different than any limitation in, the '705 Patent. EX1020 ['001 Patent], claims 1, 6, 11, 16.

Further, the issue being addressed in the history of the '164 Application was also different. EX2045 [Ducharme Decl.], ¶90. 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.” EX1023 [June 13, 2019 Remarks], 9. The issue of whether forward voltage is different from an AC mains voltage is not relevant to the arguments made in this PGR. The issue in this PGR is whether “two different DC forward voltages” as recited in claims 3, 10 and 17 should be construed to mean one single forward voltage.

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 “a 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.” EX1023 [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. This qualified statement does not “clearly express an intent to redefine the term” (*Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)), much less meet the more demanding standard for prosecution history disavowal. EX2045 [Ducharme Decl.], ¶91. Thus, the above statement is not a clear and unmistakable disavowal of claim scope with respect to the materially different claims of the '341 Patent.

Petitioner’s interpretation is also contradicted by a website that the Applicant cited (www.baldengineer.com/led-basics.html) in support of the statement. EX1023, 9; EX2038 [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	$I_f=20\text{mA}$	1.8	---	2.2	V

EX2038 [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 recited in the claims). EX2045 [Ducharme Decl.], ¶¶92-93. Thus, Bald Engineer directly contradicts Petitioner’s interpretation of the file history of the ’164 Application.

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., EX1023 at 9. As discussed above, the claims and specification of the ’705 Patent repeatedly and unambiguously disclose that LED circuits have multiple forward voltages. See §IIIA.I, above; EX2045 [Ducharme Decl.], ¶¶94. 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. *01 Communique*, 687 F.3d at 1297. 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. Petitioner's alternate construction ignores the intrinsic record and the context in which "forward voltage" is used.

First, as discussed above, claims 3, 10, and 17 recite that the first LED circuit is "operating." *See also* EX1001 ['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, the specification is clear that the forward voltage "drives" the LED circuits. *See, e.g.,* EX1001 ['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 enable the LED to illuminate as intended. EX2045 [Ducharme Decl.], ¶96. 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"

The Petition proposes the term "switch" and "selectable by a user switching the switch" for construction. Pet. 26. Petitioner argues that "[t]he ordinary meaning of 'switch' encompasses, for example, mechanical, electronic, electro-mechanical,

and programmable switches. There is no disclaimer or lexicography that would justify departing from that ordinary meaning.” Pet., 26.

For purposes of this POR only, PO does not dispute Petitioner’s construction, except to note that in the claims of the ’705 Patent, the switch must be electrically connected between a DC voltage output of an LED driver and at least one of a first operating LED circuit or at least one additional LED circuit. EX1001 [’705 Patent], claims 1, 8, 15.

C. “Selectable by a user switching the switch”

Petitioner argues that this term “includes ‘indirect’ selection of a switch by a user.” Pet., 27. The independent claims of the ’705 Patent recite that the “switch is electrically connected between the DC voltage output [of the LED driver] and at least one of the first operating LED circuit or the at least one additional LED circuit.” EX1001 [’705 Patent], claims 1, 8, 15. To the extent the Petitioner argues for “indirect” control, the switch (whether direct or indirect) must still be located electrically between the LED driver and LED circuit, and also be physically selectable by a user.

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

A. Petitioner Has Failed To Demonstrate That Any Claims Are Not Supported By Pre-AIA Applications

The ’705 Patent is ineligible for PGR because the claims on which the Petition relies are all supported 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.

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. This POR also addresses the areas where the DI indicated the POPR had not sufficiently explained why the Petition did not meet its burden.

1. Legal Standard

The post-grant review provisions set forth in section 6(d) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) (“AIA”), apply only to patents subject to the first-inventor-to-file provisions of the AIA. *See* AIA §6(f)(2)(A) (stating that the provisions of Section 6(d) “shall apply only to patents described in section 3(n)(1)”). Patents subject to the first-inventor-to-file provisions are those that issue from any application “that contains or contained at any time ... (A) a claim to a claimed invention that has an effective filing date as defined in [35 U.S.C. §100(i)], that is on or after [March 16, 2013]; or (B) a specific reference under [35 U.S.C. §120, 121, or 365(c)], to any patent or application that contains or contained at any time such a claim.” AIA § 3(n)(1); *see supra* n.4.

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).

Petitioner’s PGR eligibility arguments rely on written description challenges. “[T]he test for sufficiency [of written description] 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 Pharms., Inc. v. Eli Lilly and Co.*, 593 F.3d 1336, 1351 (Fed. Cir. 2010). “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 1373, 1380 (Fed. Cir. 2011).

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. Cir. 2008) (“disclosure does not have to provide *in haec verba* support in order to satisfy the written description requirement”). Further, “it is unnecessary to spell out every detail of the invention in the specification; only enough must be included to convince a person of skill in the art that the inventor possessed the invention and to enable such a person to make and use the invention without undue experimentation.” *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005). “A specification can adequately communicate to a skilled artisan that the patentee invented not just the combination of all identified features but combinations of only some of those features [].” *Scriptpro, LLC v. Innovation Assocs., Inc.*, 762 F.3d 1355, 1359 (Fed. Cir. 2014).

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 that the embodiments disclosed in the 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 relies upon are distinguishable. In *Flash-Control, LLC v. Intel Corp.*, No. 2020-2141, 2021 WL 2944592, at *4 (Fed. Cir. 2021), the embodiments are “never linked together in the specification.” Pet. 12-13. In *Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336, 1349 (Fed. Cir. 2013) , the claims 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 there 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 shows that the claimed embodiments 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* EX1001, [’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). EX2045 [Ducharme Decl], ¶104; EX2047 [Neikirk Dep. Tr.], 85:16-86:7 (Q ... which embodiment or embodiments is [’705 Patent 8:3-14] referring to? A. Well, the first sentence is referring to packaging of the LEDs, so that could be any of them.”). Thus, the ’705 Patent intends for different LED circuits (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 states that its different figures are related. *See, e.g.*, EX1001 ['705 Patent], 10:18-21, 10:30-34, 10:55-57, 10:62-64, 11:24-28, 11:42-45, 12:1-3; EX2045 [Ducharme Decl], ¶¶105-107. 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. EX2045 [Ducharme Decl], ¶108.

3. Claims 1-20 of the '705 Patent

a. Claims 1-20 are supported by Pre-AIA Applications

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. Pet., 13-15. Petitioner is incorrect.

The '597 PCT (filed May 28, 2010) and the applications incorporated by reference into the '597 PCT provide support for every claim of the '705 Patent. *See* §VII, below. With respect to this limitation, 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.” EX1014 ['215 Provisional], [Para 22]; EX1001 ['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 a switch that adjusts the output of the LED driver to regulate or adjust the input voltage to the LED circuit to change the light brightness. *See generally* EX1014 ['215 Provisional], [Para 18]-[Para 22].

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 adjusts the voltage “output of the LED driver” to regulate “the input to the LED circuit.” EX1014 ['215 Provisional], [Para 22]. Further, the dimmer switch is “coupled to”

the LED driver. *Id.* Thus, the '215 Provisional discloses a switch coupled to the output of the LED driver. EX2045 [Ducharme Decl.], ¶112.

The '597 PCT incorporates the '215 Provisional by reference and expands on its disclosure, for example, by expressly disclosing that LED circuits can be driven with a DC voltage. (EX1018 ['597 PCT], [Para 25]. Thus, the disclosure of the '215 Provisional must be read together with the disclosure of the '597 PCT. *Paice*, 881 F.3d at 907. The dimmer switch can be incorporated into its various embodiments of the '597 PCT. For example, the '597 PCT discloses a “switching means” ([Para 15]), “selectable desired operating voltage” ([Para 15]) and “means of switching” ([Para 35]) and refers to “switching” and “switch” in numerous embodiments, any or all of which comprise a dimmer switch. EX2045 [Ducharme Decl.], ¶113.

Further, the phrase “the LED circuit driver” in '215 Provisional [Para 22] refers to “the LED circuit driver” in [Para 18]-[Para 22], so the dimmer switch in [Para 22] is clearly meant to be combined with the LED circuit driver and associated circuitry discussed in those paragraphs. EX2045 [Ducharme Decl.], ¶¶114-116. Thus, the '215 Provisional teaches its different embodiments can be combined, including the dimmer switch. In addition, the '215 Provisional recognizes that the embodiments disclosed therein “can be combined with each other.” EX1014 ['215 Provisional], [Para 16] (“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.”).

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. The ’215 Provisional discloses drivers that output DC voltages to drive LED circuits. EX1014 [’215 Provisional], [Para 7] (“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.”). Further, the ’597 PCT clearly discloses DC driven LEDs. EX1018 [’597 PCT], [Para 25] (“each multi-voltage AC or DC LED device would be able to be driven with at least two different AC or DC forward voltages.”); EX2045 [Ducharme Decl.], ¶117.

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.” EX1014 [’215 Provisional], [Para 19]. This output voltage is a “relatively constant [*e.g.*, DC] output to a load.” *Id.*; EX2045 [Ducharme Decl.], ¶118.

Similarly, the ’215 Provisional’s dimmer embodiment discloses an LED circuit driver with a “relatively fixed voltage and/or relatively fixed frequency output.” *Id.*, [Para 22]. DC voltages are “relatively fixed” voltages. EX2045

[Ducharme Decl.], ¶119. Further, Figs. 16-19 of the '215 Provisional disclose bridge rectifiers that serve as drivers outputting DC voltages to LED circuits.

EX1014 ['215 Provisional], Figs. 16-19. Bridge rectifiers are LED drivers with an AC input and a DC output. EX2047 [Neikirk Dep. Tr.], 16:9-18 (“Q ... is it fair to say that bridge rectifiers convert AC to DC? ... A. ... Yes, that’s a fair statement.”); 29:10-13 (“In general, a bridge could be part of a drive, certainly. Of a drive circuit, certainly.”).

Petitioner admits that the '796 Application and '597 PCT disclose bridge rectifiers. Pet., 15 (“Pre-AIA Application nos. 13/322,796 (EX1016) and PCT/US2010/001597 (EX1018) disclose bridge rectifiers ...”). The Petition cites paragraph 59 (discussing Fig. 8) and Fig. 8 of the '796 Application. As shown below, the circuit shown in Fig. 8 of the '796 Application appears to be substantively identical to Fig. 18 of the '215 Provisional. The bridge rectifiers (i.e., LED drivers) are highlighted in yellow below. EX2045 [Ducharme Decl.], ¶120:

FIG. 8

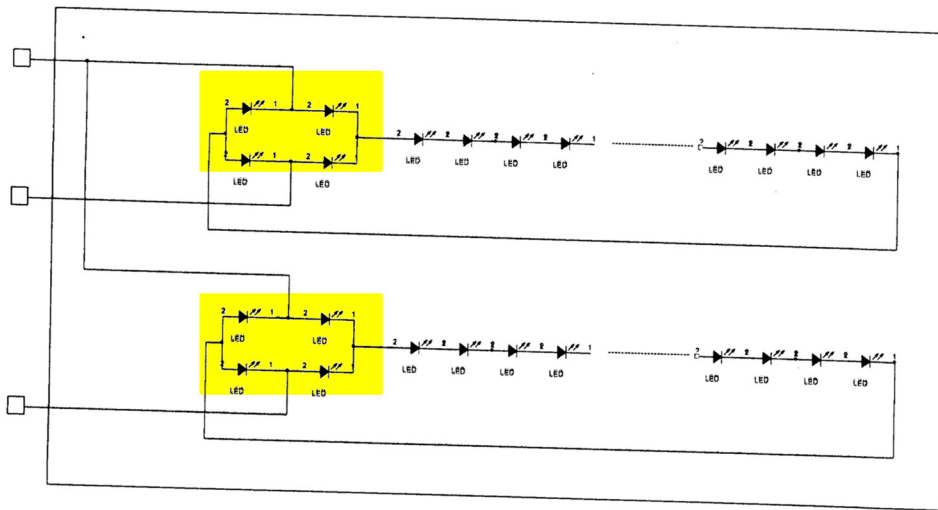
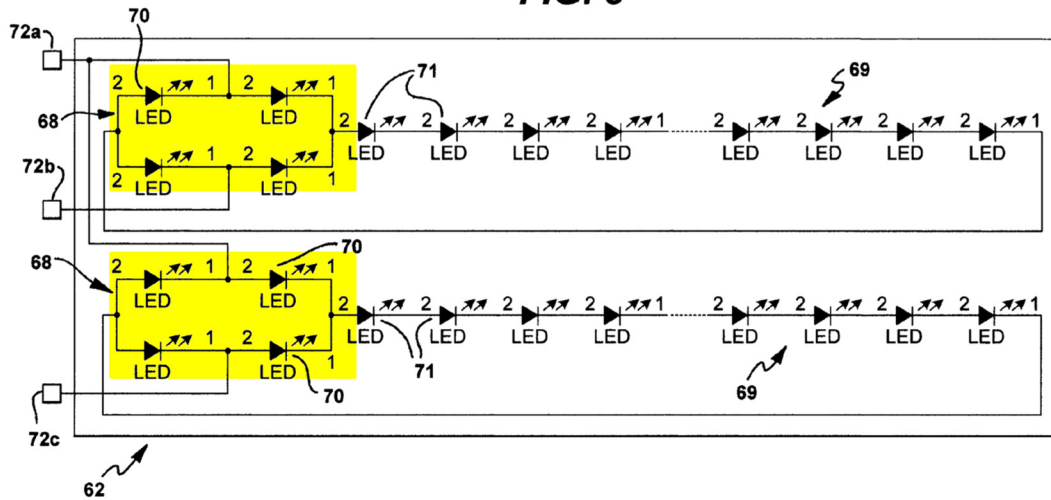


Fig. 18

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 electrically located between the output of the LED driver and the LED circuit. EX1014 ['215 Provisional], [Para 22].

Second, even if there were a disavowal in the specification stating that the claims can only relate to embodiments disclosing AC driven LEDs (which there is not), the claimed LED lighting systems *are* AC driven. EX1001 ['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. EX2045 [Ducharme Decl.], ¶122. Thus, the claims are consistent with the disclosure in the '215 Provisional and '597 PCT.

Third, none of the alleged support Petitioner cites clearly indicates a lexicographic definition or express disavowal of claim scope such that the ordinary 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 is “LED driver.” “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, EX1001 [’705 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 and ’597 PCT disclose that LED drivers typically output a DC voltage and that LED drivers can be configured to convert an AC input to DC output. The Petition identifies nothing in the intrinsic record that requires a departure from this plain and ordinary meaning. EX2045 [Ducharme Decl.], ¶123.

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...” EX1014 [’215

Provisional], [Para 22]. 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.*, [Para 18]-[Para 21]. The dimmer switch is not a standalone embodiment but instead is disclosed as an optional aspect of the invention to be combined with the other aspects of the invention. EX2045 [Ducharme Decl.], ¶124.

b. Institution Decision

The DI states that:

Patent Owner does not explain how or why the above-cited disclosure in the ’215 provisional actually or inherently discloses (i.e., shows the inventors’ possession of) a switch electrically connected “between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit,” particularly where that same switch must also “switch[] a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit” or “switch[] the at least one additional LED circuit on or off,” as recited, for example, in claim 1.

DI, 23 (emphasis in original). However, the ’215 Provisional actually discloses the LED driver is “coupled to a dimmer switch” that adjusts the “output of the LED driver” so that “the LED circuit driver output is increased to the LED circuits.”

EX1014 [’215 Provisional], [Para 22]; EX2045 [Ducharme Decl], ¶215. Thus, the

'215 Provisional expressly discloses that the dimmer switch can be placed between the LED circuit and LED driver. *See also* EX2045 [Ducharme Decl.], ¶125.

Additionally, the '597 PCT (which expressly incorporates the '215 Provisional by reference) states that LED circuits can be “driven with at least two different AC or DC forward voltages.” (EX1018 ['597 PCT], [Para 25]. *See also* EX2045 [Ducharme Decl.], ¶125. Thus, the Pre-AIA '597 PCT expressly discloses that LED circuit drivers can output DC voltage to LED circuits.

The DI states that the “same switch must also ‘switch[] a voltage level input to at least one of the first operating LED circuit or the at least one additional LED circuit’ or ‘switch[] the at least one additional LED circuit on or off,’ as recited, for example, in claim 1.” The Board points to limitations [1.e] and [1.f]. The Petition does not appear to raise this argument. Nonetheless, the '597 PCT clearly discloses these limitations as well. *See* §VII, below.

The DI also states that “Patent Owner ignores or at least does not sufficiently address the greater context of the above-cited disclosure in the '215 provisional.” DI, 22. The Board’s basis for this conclusion relies exclusively on the figures of the '215 Provisional to argue that “none of the twenty-one figures show a switch electrically connected between a DC voltage output and at least one of a first operating LED circuit or at least one additional LED circuits as recited in claim 1.” DI, 22-23. There are several issues with this analysis. First, the '215 Provisional

teaches that a switch can be placed between the output of an LED driver and the input of an LED circuit. EX1014 ['215 Provisional], [Para 22]. There is no requirement that written description must be satisfied by an application's figures alone, and no legal basis for discounting clear written description support "when read in the context of the '215 provisional as a whole." DI, 23. *See, e.g., Lampi Corp. v. Am. Power Prod., Inc.*, 228 F.3d 1365, 1378 (Fed. Cir. 2000) (holding that "[t]he drawings in the patent are merely a 'practical example' of the invention" that do not limit the scope of other disclosures in the specification.)

Second, the '215 Provisional is incorporated by reference into the (pre-AIA) '597 PCT, thus the '215 Provisional must be considered together with the '597 PCT for written description analysis. *Paice*, 881 F.3d at 907. The '597 PCT discloses that LED circuits (i.e., one or more) can be driven by DC voltages and that the switch can connect and disconnect the LED circuits. EX2045 [Ducharme Decl.], ¶¶127-128.

The DI states that:

Finally, Patent Owner appears to concede that the '215 provisional, including the above-cited disclosure (i.e., paragraph 22), does not actually or inherently disclose the subject limitation, and instead argues that such disclosure would have rendered the limitation obvious to the skilled artisan: "[T]he '215 Provisional clearly *teaches* the dimmer switch *can be* placed at the output of the LED driver."

Prelim. Resp. 40 (emphases added). However, it is well settled that a description that merely renders the invention obvious does not satisfy the written description requirement.

DI, 22 (emphasis in original). Respectfully, PO is using the emphasized term “*teaches*” in the context of “discloses” (e.g., “to cause to know,” “to impart the knowledge of” or “to make known and accepted”), not “to render the knowledge obvious to a POSITA” as the DI seems to interpret the term. *See, e.g.*, EX2048 [Merriam-Webster].; MPEP §2112.01 (“if the prior art *teaches* the identical chemical structure, the properties applicant *discloses* and/or claims are *necessarily present*.”). For the emphasized term “*can be*”, placing the switch at the driver output is one alternative location for the switch placement disclosed by the ’215 Provisional. (“[i]nventors can frame their claims to address one problem or several and the written description requirement will be satisfied as to each claim as long as the description conveys that the inventor was in possession of the invention recited in the claim.”). *Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1365 (Fed. Cir. 2009). Thus, PO’s statement does not (and was not intended to) imply the ’215 Provisional “does not actually or inherently disclose the subject limitation.” DI, 23. To the contrary, PO’s statement explicitly states the opposite.

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

a. Claims 3, 10 and 17 are supported by Pre-AIA Applications

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.” EX1001 [’705 Patent], 12:44-47, 13:22-25, 14:25-28. This element requires the concept of a switch that can switch to different positions to provide selection between two different voltages such that one of the two voltages is provided 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 because a POSITA would understand the inventor to be in possession of the invention disclosed therein. *See* §VII, below. For example, the '597 PCT expressly discloses a “multi-voltage AC or DC operable LED device” (EX1018 [’597 PCT], [Para 24]) that allows for “forward voltage drive *selection*.” EX1018 [’597 PCT], [Para 25]. While the '597 Application often discusses an “LED device”, the circuitry within the “LED device” constitutes an

“LED circuit.” EX2045 [Ducharme Decl], ¶131. Thus, the ’597 PCT discloses a switch (forward voltage drive selection) that provides more than one (i.e., at least two different) selectable DC forward voltages as an option to be provided 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.*, EX1018 [’597 PCT], [Para 13] (“The art is deficient in that it does not provide a multi-voltage ... circuit monolithically integrated on a single substrate”), [Para 14] (“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.”), [Para 15] (“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...”); EX2045 [Ducharme Decl.], ¶132.

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 one of multiple voltages and scenarios where multiple circuits are provided one of two or more available different voltage levels. EX2045 [Ducharme Decl.], ¶133.

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. EX1018, ['597 APCT], [Para 28], [Para 30] (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 exemplary embodiments, the “LED device” still comprises a single circuit and the second DC forward voltage is different than the first DC forward voltage. EX1018, ['597 PCT], [Para 28], [Para 30] (describing the second forward voltage level as “twice the level of the first forward voltage drive level”); EX2045 [Ducharme Decl.], ¶134.

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; EX1001 ['705 Patent], 9:22-29, EX1014 ['215 Provisional], [Para 22]; EX2045 [Ducharme Decl.], ¶135.

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. EX2045 [Ducharme Decl.], ¶136. 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. *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.” EX1014 ['215 Provisional], [Para 22]. “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 one of multiple [i.e., at least two different] forward voltages to one or more LED circuits. *Id.* Similarly, as described in §VII below and this section, the '597 PCT expressly teaches providing one of multiple available forward voltages to an LED circuit. EX2045 [Ducharme Decl.], ¶138. 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.” EX1014 ['215 Provisional], [Para 13]. 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. EX1014 [’215 Provisional], [Para 22]; EX1018, [’597 PCT], [Para 28], [Para 30]. 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. EX2045 [Ducharme Decl.], ¶139. Thus, claims 3, 10 and 17 are supported by the pre-AIA applications.

b. Institution Decision

The Institution Decision states as follows:

Neither the cited portions of the ’597 PCT nor the entirety of the ’597 PCT provides written description support for situations (1) and (2) under *any* construction of “forward voltage” as it appears in the claim term “two different DC forward voltages” recited in claims 3, 10, and 17. The cited portions of the ’597 PCT disclose “a first forward voltage drive level when the two single voltage LED *circuits are connected in parallel* and a second forward voltage drive level that is twice the level of the first forward voltage drive level when the at least two LED *circuits are connected in series*.” Ex. 1018 ¶28 (emphases added). That is, the forward voltage drive level in the ’597 PCT depends on whether the (at least) two single voltage LED circuits are connected together in parallel or in series. This is distinguishable from situations (1) and (2) because the cited portions do not disclose that the two different forward voltage drive levels are applied to only

one single voltage LED circuit—the cited portions describe only a situation in which at least two LED circuits are required.

DI, 28-29 (emphasis in original). This analysis misinterprets the claim language. Claim 1, for example, recites a “first operating LED circuit” and “one additional LED circuit” that is “configured to emit a different color light.” EX1001 [’705 Patent], claim 1. Thus, the difference between the “first operating LED circuit” and “one additional LED circuit” is that they emit different colors of light. *See, e.g.*, EX1014 [’215 Provisional], [Para 21] (“Individual LED circuits being the same or different colors, each requiring different forward voltages and currents may be driven from a single source LED circuit driver.”).

Claim 3 (which depends on claim 1) recites “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.*, claim 3. Thus, the claim *allows both the* “first operating LED circuit” *and* the “one additional LED circuit” to have *multiple voltages*—or in other words, to be “multiple voltage level ... LED circuits.” EX1018 [’597 PCT], [Para 15]. *See, e.g.*, *Id.*, [Para 5] (“The present invention specifically relates to multiple voltage level [] light emitting diode circuits”). In other words, the claims allow for at least two different color LED circuits where the voltage (and, correspondingly, brightness)

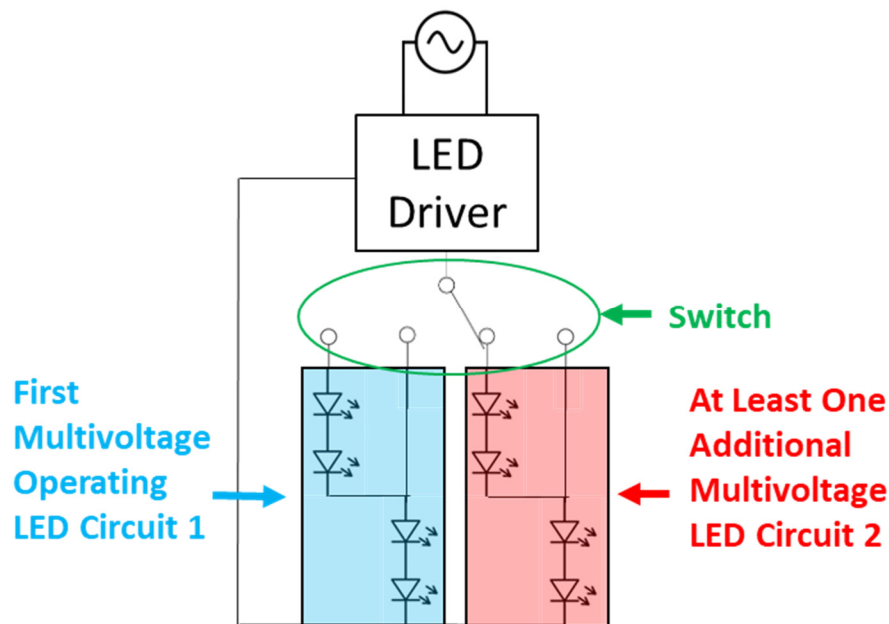
of each different color LED circuit can be adjusted. EX2045 [Ducharme Decl.], ¶141.

The DI's analysis assumes the "first operating LED circuit" and "one additional LED circuit" must be "*single voltage* LED circuits." DI, 28-29. To the contrary, the claims expressly recite that either or both the "first operating LED circuit" and "one additional LED circuit" are "*multiple voltage*" LED circuits. EX1001 ['705 Patent], claim 3 ("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."). Nothing in the claims or specification states that an LED circuit must be limited to operate on a single voltage and no POSITA would reasonably interpret "LED circuit" to exclude multiple voltage LED circuits, given the clear teachings otherwise discussed above. EX2045 [Ducharme Decl.], ¶142. *See Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) ("The words of a claim are generally given their ordinary and customary meaning" except where the patentee lexicographically defines the term or disavows claim scope.)

Stated another way, the claims recite (1) a switch to switch voltage levels provided to at least two LED circuits (*see, e.g.*, EX1018 ['597 PCT], [Para 15]), (2) the at least two LED circuits are different colors (*see, e.g.*, EX1014 ['215 Provisional], [Para 21]), and (3) the two LED circuits are each multi-voltage LED circuits. *See, e.g.*, EX1018 ['597 PCT], [Paras 5, 15]. Each of these limitations is

expressly disclosed in the '597 PCT and/or the '215 Provisional that it incorporates by reference. EX2045 [Ducharme Decl.], ¶143. Additionally, the pre-AIA applications disclose that the LED circuits “can be of varied make up and can be combined with each other” and are “scalable and compatible” with one another. EX1014 ['215 Provisional], [Para 16].

One example of a circuit that satisfies situations (1) and (2) is shown below:



Depending on the position, the illustrated switch provides multiple (different) voltages to either situation (1) (*e.g.*, circuit 1, shown in blue) or situation (2) (*e.g.*, circuit 2, shown in red). Further, the '597 PCT supports the use of multiple switches and/or more than two circuits in combination in a circuit. *See, e.g.*, EX1018 ['597 PCT], Abstract (“Brightness level selectability” is not limited to two levels), [Para 15] (using the term “switching means,” which encompasses

two or more switches), and “at least one additional LED circuit,” which encompasses two or more LED circuits); EX1014 [’215 Provisional] [Para 16] (“such packages can be of varied make up and can be combined with each other ... given the scalable and compatible arrangements possible with, and resulting from, the invention”), Fig. 15 (showing three different LED circuits). In short, the ’597 PCT expressly discloses scalable and combinable multi-voltage LED circuits as disclosed in claims 3, 10 and 17. Additionally, the Petition construed “switch” in the ’705 Patent as “comprising” multiple “switches” including “transistors.” Pet., 26-27. *See, e.g.*, EX2045 [Ducharme Decl.], ¶145. Thus, claims 3, 10 and 17 of the ’705 Patent are supported by at least the ’597 PCT.

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

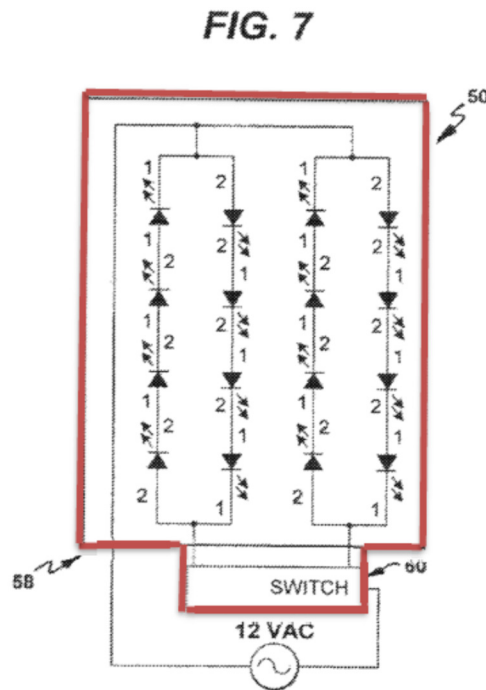
Claims 3, 10 and 17 of the ’341 patent contain the same limitation as claims 3, 10, and 17 of the ’705 patent: “wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit.” EX1006, 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.

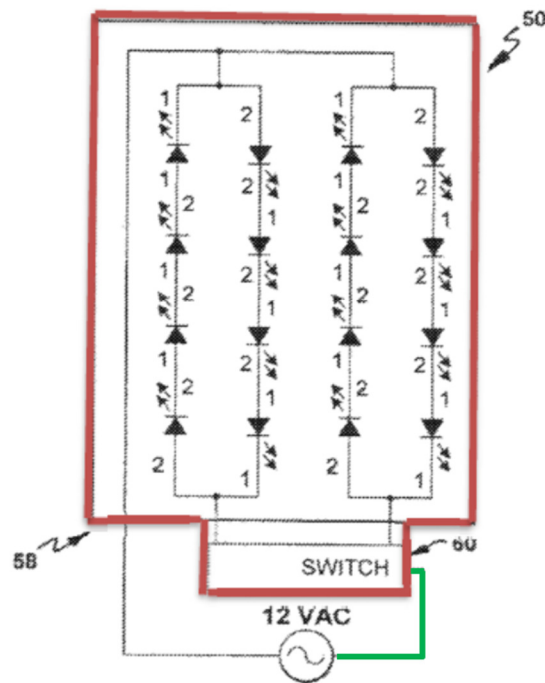
These claims are far from impossible and are well understood on their face. EX2045 [Ducharme Decl.], ¶149. Claim 4 requires “an LED lighting device comprising ... a switch” wherein that “switch is connected between the AC voltage power source and the LED lighting device.” EX1006 ['341 Patent], claim 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:



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 typical

arrangement for an LED device containing a switch. EX2045 [Ducharme Decl.], ¶150. 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.*, EX1006 [’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 recite) 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. EX2045 [Ducharme Decl.], ¶151.

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. EX2045 [Ducharme Decl.], ¶152. 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) that is connected between an AC power source and an LED lighting device. EX1018, Figs. 7, 9, [0057]–[0058]. Further, the '597 PCT discloses embodiments where the switch is part of the LED lighting device. *See* EX1018 ['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 independent claims 1 and 11 of the ’001 Patent, 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.” EX1020 [’001 Patent], claims 1 and 11.

Petitioner is incorrect. The ’597 PCT expressly discloses a “multi-voltage AC or DC operable LED [lighting] device” (EX1018, [’597 PCT], [Para 24]) that allows for “forward voltage drive selection.” EX1018, [’597 PCT] [Para 25]. 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.” EX1018, [Para 15]. *See also* EX1018, [Para 18] (“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.”), [Para 56] (“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...”), [Para 57] (“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.”); [Para 58] (“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)’ EX2045 [Ducharme Decl.], ¶154.

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. EX2045 [Ducharme Decl.], ¶155. 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 claim 15 of the ’001 Patent 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 a voltage from an AC mains power source. *See, e.g.*, EX1018 [’597 PCT], Fig. 9 (showing “2-way switch” 74 connected to AC power source); EX1014 [’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. EX1014 [’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. EX2045 [Ducharme Decl.], ¶157.

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.” EX1014 [’215 Provisional], [Para 22]. 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 from the mains power source, thereby adjusting the voltage at the output of the LED driver. EX2045 [Ducharme Decl.], ¶158.

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. However, 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. EX1014 [’215 Provisional], [Para 22]. *See* §§III.A, IV.A.3, IV.A.4, *supra*. Additionally, the pre-AIA applications disclose numerous different switches. *See, e.g.*, EX1014 [’215 Provisional], [Para 13], Figs. 12, 13, 15, 19; EX1018 [’597 PCT], [Para 8], [Para 15], [Para 18], [Para 35], [Para 37], [Para 56]-[Para 59], Fig. 7, Fig. 9. Indeed, Petitioner even construed the term “switch” to “comprise” multiple “transistors” and “switches,” meaning Petitioner interprets this term to apply to multiple switches operating in conjunction with LED circuits. Pet. 26-27. Thus, because 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. EX2045 [Ducharme Decl.], ¶159.

9. Claim 9 of the '001 Patent

The Petition additionally argues that claim 9 of the '001 Patent 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.*, EX1014, [Para 21], [Para 22]; EX1018, [Para 25], [Para 30] (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. EX2045 [Ducharme Decl.], ¶160. 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:

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. 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.” EX1001 [’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 recite “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 error. EX2045 [Ducharme Decl.], ¶163.

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.

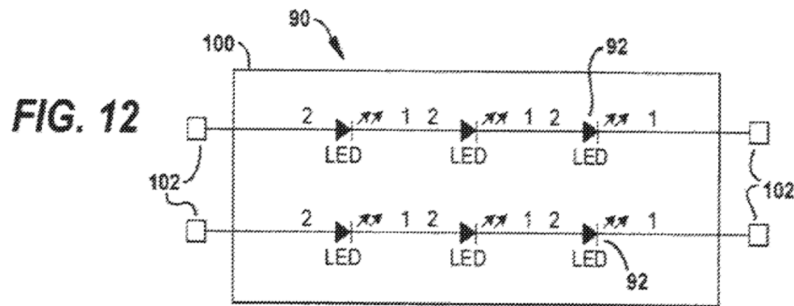
Even under Petitioner’s first (incorrect) construction, the claim recites permissible features. EX2045 [Ducharme Decl.], ¶164. Petitioner’s first proposed construction is “the minimum voltage difference required between the anode and cathode of the LEDs in the claimed circuit to allow current to flow 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. EX2045 [Ducharme Decl.], ¶165. 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 is selectable by a switch.

Further, the specification clearly and repeatedly teaches that LED circuits may have more than one voltage level. *See, e.g.*, EX1001 [’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.”); EX2045 [Ducharme Decl.], ¶166. *See also* §III.A, 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.” EX1001 [’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.” EX1001 [’705 Patent], 3:15-23.

The '705 Patent describes numerous embodiments with similar multi-voltage functionality. EX2045 [Ducharme Decl.], ¶167. For example, Fig. 12 of the '705 Patent (below) illustrates one multi-voltage configuration:



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.” EX1001 [’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. EX2045 [Ducharme Decl.], ¶168. 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. EX2045 [Ducharme Decl.], ¶169. The inventor clearly understood an 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.

B. Claims 3, 10, and 17 Satisfy the Written Description Requirement Under Any Construction

The '705 Patent supports the limitation “wherein the switching of the switch provides at least two different DC forward voltages to at least one of the first operating LED circuit or the at least one additional LED circuit” under any construction. EX2045 [Ducharme Decl], ¶180. *See also supra*, §IV.A.4.

Petitioner’s argument is that no “embodiments [of the '705 Patent] include a switch, wherein switching the switch provides two different DC forward voltages to an LED circuit.” Pet., 32. Petitioner’s argument ignores the '705 Patent’s disclosure of switches providing different DC forward voltages to an LED circuit. For example, at 3:15-23-, the '705 Patent states:

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 and/or more than one level of brightness “multi-brightness” based on a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.

Ex. 1001 [’705 Patent], 3:15-23.

This passage discloses “a switch” (e.g., switching means) “wherein switching the switch” (e.g., connecting or disconnecting the at least one additional LED circuit to and/or from a first LED circuit) “provides two different DC forward voltages” (e.g., more than one AC or DC forward voltage) to an LED circuit (one additional LED circuit or the first LED circuit or the combination of the one additional LED circuit with the first LED circuit). EX2045 [Ducharme Decl.], ¶172. There are numerous other embodiments of the ’705 Patent disclosing similar configurations. *See, e.g.*, Ex. 1001 [’705 Patent], 4:33-45, 5:35-51, 5:52-6:3; Figs. 8, 9, 11, 12. EX2045 [Ducharme Decl.], ¶172. Thus, a POSITA would clearly understand the inventor to be in possession of this information.

VI. GROUND 3: CLAIMS 1-3, 5, 7-10, 12, 14, AND 16 ARE NOT OBVIOUS OVER BRUNING IN VIEW OF EVANICKY

- A. “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.”**

Independent claims 1 and 8 recite “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.” EX1001 [’705 Patent], claims 1 and 8. Claims 1 and 8 also recite the switching “is selectable by a user switching the switch.” *Id.*

Petitioner argues:

In the combination, the color-specific switches of Bruning are the switch, and they are indirectly selectable by the user via the knob/slider of Evenicky [sic] and the controllers. Alternatively, the combination of the color-specific switches of Bruning, the controllers, and the slider/knob of Evanicky together are the switch, which is directly selected by the user.

Pet., 54, 56. In Petitioner’s first combination, “the color-specific switches of Bruning” are not “selectable by a user switching the switch.” The user in this combination is switching Evanicky’s “knob/slider. To the extent Petitioner relies on Evanicky’s “knob/slider” as “indirectly” switching the switch, the “knob/slider” of Evanicky is not “electrically connected between the DC voltage output and one of the first operating LED circuit or the at least one

additional LED circuit” as required by the claims. EX2045 [Ducharme Decl.], ¶177. The same is true for Petitioner’s second combination.

Accordingly, Petitioner’s argument fails.

B. “Wherein the switch has at least two positions”

Claims 2, 9, and 16 recite that “the switch has at least two positions.” EX1001 [’705 Patent], claims 2, 9, and 16. Petitioner argues that “[i]n the combination, the switch includes the slider or knob of Evanicky. A slider or knob explicitly discloses at least two positions, as the user will slide the slider or turn the knob between multiple positions.” Pet., 54. *See id.*, 57, 59. As discussed above, Evanicky’s slider/knob is not 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.” Instead, this combination relies on Bruning’s transistors for that limitation. Pet., 54. However, transistors have no movable positions (unlike, for example, a two-way switch)—they are simply controlled to enable current to pass through. EX2045 [Ducharme Decl.], ¶177. Accordingly, Bruning and Evanicky do not disclose this limitation.

VII. GROUND 4: CLAIMS 1-2, 5, 7-9, 12, 14-16, AND 19 ARE PATENTABLE OVER DOHENY

Doheny does not qualify as prior art to the claims of the ’705 Patent. Doheny (EX1011) was published on February 1, 2018 with an earliest possible effective

filing date of February 19, 2016. The '802 Application (which issued as the '705 Patent) claims priority to a series of continuations dating back to the '597 PCT, filed on May 28, 2010. *See supra*, §II.C. Each of those continuation applications is expressly incorporated by reference into the '802 Application. *Id.*, Ex1001 ['341 Patent], 1:21-23.

Claims 1-2, 5, 7-9, 12, 14-16 and 19 of the '705 Patent are each supported by the '597 PCT, the '802 Application, and each intervening application. EX2045, [Ducharme Decl], ¶180. Further, as discussed above, Petitioner is incorrect that any claims of the '705 Patent lack §112 support. *See supra*, §IV.

The claim chart below demonstrates support in the '597 PCT (and the '215 Provisional, which is incorporated therein by reference) for each limitation of the claims of the '705 Patent. EX2045, [Ducharme Decl], ¶180. As discussed, each application in the '705 Patent priority chain starting with the '597 PCT Application incorporates every previous application by reference; thus, there is continuity of disclosure between each application in the chain up to and including the '705 Patent.

'705 Patent Claim	'597 and '215 Application Support
[1.pre] An LED lighting system comprising:	<i>See ,e.g</i> , EX1014 ['215 Provisional], [Para 14] (“LED lighting device or system”);

	[Para 16] (“the LED circuits and AC drivers of the present invention permit pre-packaging of the LED portion of a lighting system”); [Para 17] (“AC driven LED circuits [] permit or enable lighting systems where LED circuits may be added or subtracted... .”)
[1.a] a first operating LED circuit and at least one additional LED circuit,	<i>See, e.g.,</i> EX1018 [’597 PCT Application], Abstract (“LED lighting device having at least two LED circuits ...”); [Para 15] (“circuits and devices that can be driven with more than one AC or DC forward voltage ‘multi-voltage’ ... that is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration”). Figs. 1-9, 11-12 (each showing two LED circuits, sometimes unconnected and sometimes

	connected together in a larger multi-voltage or multi-current LED circuit).
[1.b] at least one of the first operating LED circuit or the at least one additional LED circuit including at least two LEDs connected in either series or parallel, and	<i>See, e.g.</i> , EX1018 ['597 PCT Application], [Para 28] (“Each single voltage LED circuit has at least two LEDs connected to each other in series.”); Figs. 1-9, 11-12 (each showing at least two LED circuits, each of which has two or more LEDs connected in series or in parallel). EX1014 ['215 Provisional], Figs. 4-21 (same)
[1.c] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;	EX1014 ['215 Provisional], [Para 21] (“Individual LED circuits being the same or different colors ...”).
[1.d] a switch capable of at least one of:	EX1018 ['597 PCT Application], [Para 15] (“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 <i>selectable desired operating voltage level</i> that is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration and/or more than one level of brightness ‘multi-brightness’ based on a <i>switching means</i> that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.”); [Para 15] (“drive voltage level ... select-ability”); [Para 16] (“means of selecting a forward voltage”); [Para 35] (“The multi-voltage and/or multi-current single chip AC LED and/or package is configured to provide a means of switching”); Figs. 7, 9. EX1014 [’215 Provisional], [Para 22] (“dimmer switch”), Figs. 12, 15, 19.
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[1.e] (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	EX1014 [’215 Provisional], [Para 22] (“dimmer switch that <i>regulates voltage</i> or frequency or may have integrated circuitry that allows for <i>adjustability of the otherwise relatively fixed voltage</i> and/or relatively fixed frequency output of the LED circuit driver. The LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits.”).
[1.f] (b) switching the at least one additional LED circuit on or off,	EX1018 [’597 PCT Application] [Para 15] (“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 <i>selectable desired operating voltage level that is achieved by electrically connecting the LED circuits in a series or parallel circuit configuration</i> and/or ... <i>a</i>

	<i>switching means that connects and/or disconnects at least one additional LED circuit</i> to and/or from a first LED circuit.”); [Para 35] (“The multi-voltage and/or multi-current single chip AC LED and/or package is configured to provide a means of <i>switching on at least one additional single voltage AC LED circuit</i> within multi-voltage and/or multi-current AC LED circuit to provide increased brightness from the LED lamp.”).
[1.g] wherein (a) or (b) is selectable by a user switching the switch; and	EX1018 [’597 PCT Application], Abstract (“level selectability may be passed on through to the exterior of the LED package and may be selected by the LED package user”); [Para 15] (“the drive voltage level [] select-ability to be passed on through to the exterior of the LED

	package and allowing the voltage level [] to be selected at the LED package user.”).
[1.h] 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,	The ‘597 PCT application teaches the input to an LED driver may be AC. EX1018 [’597 PCT Application] [Para 7] (“With proper design considerations LEDs may be driven more efficiently with direct AC or rectified AC than with constant voltage or constant current DC drive schemes”); [Para 15] (“It would further be advantageous to provide multiple voltage level and/or multiple brightness 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.”); Fig 9 (showing bridge rectifiers receiving AC input); Fig. 10 (showing LED bridge circuit 80). The ’597 Application teaches that its drivers can have DC outputs. EX1018 [’597 PCT Application], [Para 25] (“each multi-voltage AC or DC LED device would be able to be driven with at least two different AC or DC forward voltages.”); [Para 28] (Each single voltage LED circuit is designed to be driven with a predetermined forward voltage and preferably matching forward voltages for each circuit such as 12VDC, 24VDC, 120VDC, or other DC voltage levels for each single voltage LED circuit. Each multi-voltage and/or multi-brightness LED device would be able to be driven with at
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	least two different DC forward voltages resulting in a first forward voltage drive level when the two single voltage LED circuits are connected in parallel and a second forward voltage drive level that is twice the level of the first forward voltage drive level when the at least two LED circuits are connected in series..”); [Para 61] (“The full wave LED bridge circuit has electrical contacts 86 to provide for AC voltage input connectivity and DC voltage output connectivity.”). EX1014 [’215 Provisional], [Para 19] (“The higher frequency LED circuit inverter driver may be a electronic transformer, halogen or high intensity discharge (HID) lamp type driver with design modifications for providing a
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	relatively fixed voltage as the LED circuit load changes. Meaning if the LED circuit inverter driver is designed to have an output voltage of 12V LED circuit driver would provide this output as a relatively constant output to a load having one or more than one LED circuits up to the wattage limit of the LED circuit driver even if LED circuits were added to or removed from the output of the LED circuit driver.”). Note the parties agree that a bridge rectifier is an LED driver and that an AC input passed through a bridge rectifier provides a DC output. <i>See, e.g.</i> Pet., 10 (“bridge rectifiers can be used to convert AC to DC.”).
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[1.i] 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.	EX1018 ['597 PCT Application] [Para 15] (“a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.”). Here, the switching means is directly connected to the LED circuits (and thus EX1014 ['215 Provisional], [Para 22] (“the LED circuit driver may be coupled to a dimmer switch ... that allows for adjustability of the ... output of the LED circuit driver.”).
2. The LED lighting system of claim 1, wherein the switch has at least two positions.	EX1018 ['597 PCT Application], [Para 18] (switches “switch to higher brightness levels just like 2-way or 3-way incandescent lamps”). Figs. 7 and 9 (showing “2-way switch).

	EX1014 ['215 Provisional], [Para 22] (“dimmer switch ... allows for adjustability of the otherwise relatively fixed voltage ...”), Figs. 12 and 19 (showing “2-way switch”), Fig. 15 (showing “3-way switch”)
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.	Claim 1 is directed to two different colored multi-voltage LED circuits. As discussed above, the '597 PCT Application discloses each multi-voltage LED circuit is comprised of two or more single voltage LED circuits and each multi-voltage LED circuit has a “switching means” to switch on or off additional single voltage LED circuits. The '597 PCT Application also discloses the “switching means” can be placed at the output of the LED driver.

	EX1014 ['215 Provisional], [Para 22] (“dimmer switch ... allows for adjustability of the otherwise relatively fixed voltage output of the LED circuit driver. The LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits.”). EX1018 ['597 PCT Application] [Para 14] (“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.”), [Para 15] (“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...”),
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	[Para 15] (“switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.”).
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.	EX1014 [’215 Provisional] [Para 15] (“Preferred embodiments of a package include an insulating substrate whereon the LEDs, capacitors or resistors are formed or mounted.”), [Para 12] (“Each multi-chip multi-voltage AC LED package can be mounted on a printed circuit board assembly and/or other substrate”). EX1018 [’597 PCT Application] [Para 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.”), [Para 13] (“The art is deficient in that it does not

	provide a multi-voltage and/or multi-current circuit monolithically integrated on a single substrate”), [Para 24] (“at least two single voltage series LED circuits ... are formed on a single chip or substrate providing a multi-voltage AC or DC operable LED device.”), [Para 28] (“at least two single voltage LED circuits are formed on a single chip or 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 and/or multi-brightness LED device for direct DC power operation.”).
5. The LED lighting system of claim 1, wherein the switching of the switch changes light output of the LED lighting device.	EX1014 [’215 Provisional] [Para 22] (“The LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits.”)

	EX1018 ['597 PCT Application] [Para 35] (“The multi-voltage and/or multi-current single chip AC LED and/or package is configured to provide a means of switching on at least one additional single voltage AC LED circuit within multi-voltage and/or multi-current AC LED circuit to provide increased brightness from the LED lamp.”), [Para 58] (“the brightness of the multi-brightness LED lighting device 62 can be increased and/or decreased in a fixed manner or a switching process.”).
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.	EX1014 ['215 Provisional], [Para 18] (“The LED circuit driver output voltage and frequency delivered to the LED circuit may be higher or lower than mains power voltage and frequencies by using an LED circuit inverter driver.”).

	EX1018 ['597 PCT Application], [Para. 6] ("LEDs ... have been driven by DC voltage sources using resistors, current regulators and voltage regulators to limit the voltage and current delivered to the LED.").
7. The LED lighting system of claim 1, 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.	EX1014 ['215 Provisional], [Para 22] ("the LED circuit driver may be coupled to a dimmer switch ..."), EX1018 ['597 PCT Application] [Para 15] ("It would further be advantageous to provide multiple voltage level [] light emitting LED circuits, chips, packages and lamps [] that can easily be electrically configured for at least two forward voltage drive levels with direct AC voltage coupling, bridge rectified AC voltage

	coupling or constant voltage DC power source coupling. ... This invention comprises circuits and devices that can be driven ... by electrically connecting the LED circuits [] based on a switching means that connects and/or disconnects at least one additional LED circuit to and/or from a first LED circuit.”).
[8.pre] An LED lighting system comprising:	<i>See claim [1.pre], above.</i>
[8.a] a first operating LED circuit and at least one additional LED circuit,	<i>See claim [1.a], above.</i>
[8.b] at least one of the first operating LED circuit or the at least one additional LED circuit including at least two LEDs connected in either series or parallel, and	<i>See claim [1.b], above.</i>

[8.c] the at least one additional LED circuit being configured to emit a different color light compared to the first operating LED circuit;	<i>See claim [1.c], above.</i>
[8.d] a switch capable of at least one of:	<i>See claim [1.d], above.</i>
[8.e] (a) switching a brightness level of at least one of the first operating LED circuit or the at least one additional LED circuit, or	<i>See claim [1.e], above.</i> Increasing voltage (as in claim [1.e]) across an LED circuit will correspondingly increase brightness. <i>See, e.g.,</i> EX1014 [’215 Provisional], ¶[0022] (“The LED circuits get brighter as the voltage and/or frequency of the LED circuit driver output is increased to the LED circuits.”); EX1018 [’597 PCT Application], [Para 35] (switching on additional circuits in a multi-voltage LED circuit “provide[s] increased brightness”).
[8.f] (b) switching the at least one additional LED circuit on or off,	<i>See claim [1.f], above.</i>

[8.g] wherein (a) or (b) is selectable by a user switching the switch; and	<i>See claim [1.g], above.</i>
[8.h] 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,	<i>See claim [1.h], above.</i>
[8.i] 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.	<i>See claim [1.g], above.</i>
9. The LED lighting system of claim 8, wherein the switch has at least two positions.	<i>See claim 2, above.</i>

10. The LED lighting system of claim 8, 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.	<i>See claim 3, above.</i>
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.	<i>See claim 4, above.</i>
12. The LED lighting system of claim 8, wherein the switching of the switch changes light output of the LED lighting device.	<i>See claim 5, above.</i>
13. The LED lighting system of claim 8, wherein the LED driver	<i>See claim 6, above.</i>

is configured to cause the DC voltage output to have a lower voltage than the AC voltage power source	
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 one additional LED circuit.	<i>See claim 7, above.</i>
[15.pre] An LED lighting system comprising:	<i>See claim [1.pre], above.</i>
[15.a] a first operating LED circuit and at least one additional LED circuit,	<i>See claim [1.a], above.</i>
[15.b] the at least one additional LED circuit being configured to emit a different color light	<i>See claim [1.c], above.</i>

compared to the first operating LED circuit;	
[15.c] a switch capable of at least one of:	<i>See claim [1.d], above.</i>
[15.d] (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	<i>See claim [1.e], above.</i>
[15.e] (b) switching the at least one additional LED circuit on or off,	<i>See claim [1.f], above.</i>
[15.f] wherein (a) or (b) is selectable by switching the switch; and	<i>See claim [1.g], above.</i>
[15.g] 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	<i>See claim [1.h], above.</i>

first operating LED circuit or the at least one additional LED circuit,	
[15.h] 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.	<i>See claim [1.i], above.</i>
16. The LED lighting system of claim 15, wherein the switch has at least two positions.	<i>See claim 2, above.</i>
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.	<i>See claim 3, above.</i>

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.	<i>See claim 4, above.</i>
19. The LED lighting system of claim 15, wherein the switching of the switch changes light output of the LED lighting device.	<i>See claim 5, above.</i>
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.	<i>See claim 6, above.</i>

Doheny does not qualify as prior art under 35 U.S.C. §102 because the effective filing date for the challenged claims is at least as early as the May 28,

2010 filing date of the '597 PCT, which is nearly six years before Doheny's provisional was filed. Accordingly, Ground 4 fails.

VIII. GROUND 5: CLAIMS 1-2, 5, 7-9, 12, 14-16, AND 19 ARE PATENTABLE OVER VAN WINKLE

Van Winkle does not qualify as prior art to the claims of the '705 Patent. Van Winkle (EX1012) was published on July 19, 2018 with an earliest possible effective filing date of January 13, 2017. *Id.* Van Winkle, like Doheny, does not qualify art because the effective filing date for the challenged claims is at least as early as the May 28, 2010 filing date of the '597 PCT, which is nearly seven years before Van Winkle's provisional was filed. EX2045 [Ducharme Decl.], ¶182. Accordingly, Ground 5 fails.

IX. GROUND 6: CLAIMS 1-3, 5, 7-10, 12, 14-17, AND 19 ARE NOT OBVIOUS OVER BRUNING IN VIEW OF LEE

A. “Wherein the switch is electrically connected between the DC voltage output and at least one of the first operating LED circuit or the at least one additional LED circuit.”

As discussed above for Ground 3, Independent claims 1 and 8 recite that “the switch is electrically connected between the DC voltage output [of an LED driver] and at least one of the first operating LED circuit or the at least one additional LED circuit.” EX1001 ['705 Patent], claims 1 and 8. Claims 1 and 8 also recite that the switching “is selectable by a user switching the switch.” *Id.*

Petitioner argues that:

In the combination, the color-specific switches of Bruning are the switch, and they are indirectly selectable by the user via the slider of Lee and the controllers. Alternatively, the combination of the color-specific switches of Bruning, the controllers, and the slider of Lee together are the switch, which is directly selected by the user.

Pet., 102-103. Bruning in view of Lee does not disclose these limitations for the same reason discussed above for Ground 3—namely, Bruning’s switch (transistor) is not “selectable by a user switching the switch” and the “slider of Lee” is not “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.” EX1001 [’705 Patent], claims 1 and 8.

B. “Wherein the switch has at least two positions”

Claims 2, 9 and 16 recite that “the switch has at least two positions.” EX1001 [’705 Patent], claims 2, 9 and 16. Petitioner argues that “[i]n the combination, the switch includes the slider of Lee. A slider explicitly discloses at least two positions, as the user will slide the slider between multiple positions.” Pet., 103. *See id.*, 105, 107. Lee’s slider/knob is not electrically connected between the DC voltage output (of the LED driver) and at least one of the first operating LED circuit or the at least one additional LED circuit.” Instead, this combination relies on Bruning’s transistors for that limitation. Pet., 103. However, transistors have no movable positions (unlike, for example, a two-way switch)—they are

simply controlled to allow current to pass through. EX2045 [Ducharme Decl.],

¶185. Accordingly, Bruning and Lee do not disclose this limitation.

X. CONCLUSION

For the foregoing reasons, the Petitioner has failed to show by a preponderance of the evidence that the challenged claims are unpatentable.

Respectfully submitted,

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Date: October 27, 2023

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner's Response (the "POR") consists of 18,649 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POR 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 P. McBride /

Date: October 27, 2023

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served
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PATENT OWNER'S RESPONSE

EXHIBITS 2045-2053

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