

2023-2346

**In the United States Court of Appeals
for the Federal Circuit**



LYNK LABS, INC.,

Appellant,

-V-

SAMSUNG ELECTRONICS CO., LTD.,

Appellee.

On Appeal from the USPTO Patent Trial and Appeal Board
No. IPR2022-00149 for U.S. Patent No. 10,687,400

Opening Brief of Appellant Lynk Labs, Inc.

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PATENT CLAIMS AT ISSUE*

U.S. Patent No. 10,687,400, Claim 7:

7. A lighting system comprising: [a]

an LED circuit array comprising an LED circuit comprising a plurality of LEDs connected in series; [b]

a capacitor; [d]

a bridge rectifier configured to receive an input AC voltage from a mains power source; [d]

a driver connected to the bridge rectifier and configured to provide a rectified output AC voltage to the LED circuit array; [e]

wherein a forward voltage of the LEDs of the LED circuit array matches the rectified input AC voltage output of the driver; [f] and

wherein the LED circuit array, the capacitor, the bridge rectifier, and the driver are all mounted on a single substrate. [g]

* The letter annotations ([a], [b], etc.) identifying claim limitations correspond to those identified by the parties in the IPR papers.

CERTIFICATE OF INTEREST

I certify the following information is accurate and complete to the best of my knowledge.

Respectfully submitted,

/s/ Stephen T. Schreiner
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1. Represented Entity

Lynk Labs, Inc.

2. Real Party in Interest

N/A

3. Parent Corporation and Stockholders

N/A

4. Legal Representatives

Other than counsel who have entered an appearance in this court, the following counsel have made previous appearances in lower court proceedings:

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5. Related Cases

A Notice of Related Case Information was filed on August 6, 2023, ECF No. 4.

6. Organizational Victims and Bankruptcy cases

N/A

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STATEMENT OF RELATED CASES

This is an appeal from the final written decision (“FWD”) in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2022-00149, Paper 33 (PTAB June 26, 2023) by the United States Patent and Trademark Office Patent Trial and Appeal Board (“PTAB” or “Board”) for U.S. Pat. No. 10,687,400 (“the ’400 Patent”). Appx0001-0070 [FWD]. No appeal in or from the same proceeding in this PTAB was previously before this Court or any other appellate court.

There is one pending district litigation involving the ’400 Patent. Samsung Electronics Co., Ltd. (“Samsung” or “Petitioner”) filed a declaratory judgment action on May 17, 2021, against Lynk Labs Inc. (“Lynk” or “Patent Owner”) involving the ’400 Patent in *Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. v. Lynk Labs, Inc.*, Case No. 1:21-cv-02665 (N.D. Ill.). That suit was stayed on March 21, 2023.

JURISDICTIONAL STATEMENT

The PTAB had jurisdiction under 35 U.S.C. § 6 over IPR2022-00149 that is the subject of this appeal. The PTAB issued its Final Written Decision in IPR2022-00149 on June 26, 2023. Appx0001-0070 [FWD]. Lynk timely filed its notice of appeal on August 25, 2023. Appx6566-6571 [NoA, 1-6]. This Court has jurisdiction under 35 U.S.C. §§ 141(c) , 319 and 28 U.S.C. § 1295(a)(4)(A).

STATEMENT OF THE ISSUES

1. Whether the Board erred in finding that for the limitation “an LED circuit array comprising an LED circuit comprising a plurality of LEDs connected in series” is properly construed to encompass a plurality of LED circuits/groups of LEDs being connected in series even when there are no LEDs are connected in series.

2. Whether the Board erred by determining that “an LED circuit comprising a plurality of LEDs connected in series” was met in view of the cited references.

3. Whether the Board erred in construing the limitation “wherein a forward voltage of the LEDs ... matches the rectified [] AC voltage output of the driver” encompasses the rectified AC output voltage being “less than” the forward voltage of the LEDs.

4. Whether the Board erred by determining that the limitation for the “forward voltage of the LEDs ... matches the rectified [] AC voltage output of the driver” in Claim 7 was met in view of the cited references.

5. Whether the Board erred in determining that the Martin reference, a published and later abandoned U.S. patent application that could only be prior art under pre-AIA 35 § 102(e)(1), can be applied in an IPR as a “printed publication” under 35 U.S.C. § 311(b).

STATEMENT OF THE CASE

This case is an appeal from the Board’s decision that concluded Claims 7-13 and 15-17 of the ’400 Patent are unpatentable over certain references stated in Petitioner’s grounds. The decision is *Samsung Electronics, Co., Ltd. v. Lynk Labs Inc.*, IPR2022-00149, Paper 33 (PTAB June 26, 2023). Appx0001-0070 [FWD].

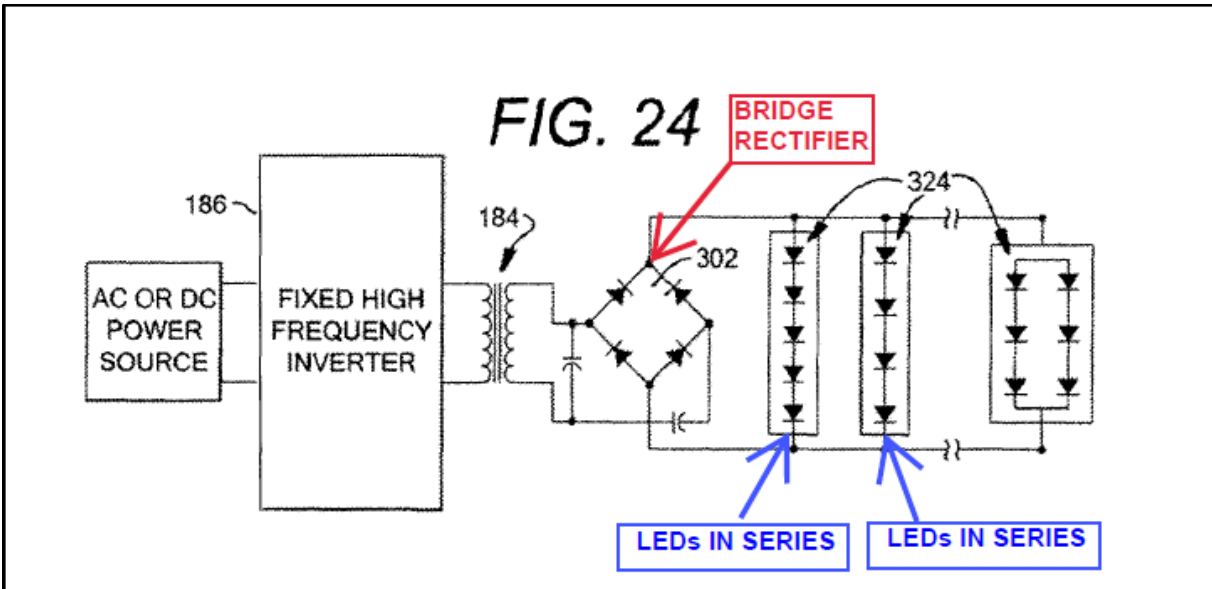
I. THE ’400 PATENT

A. The Invention Disclosed in the ’400 Patent

Patent Owner Lynk Labs, Inc. (“Lynk”) is a practicing entity that manufactures and sells its patented products to LED lighting manufacturers for various applications.

The ’400 Patent discloses a variety of LED lighting systems with LED circuits, LED drivers, and other circuit components. The ’400 Patent discloses multiple embodiments of LED circuits with full wave bridge rectifiers and drivers that deliver power to LED circuits.

Figure 24 illustrates a lighting system including an AC power source, a driver 186, a bridge rectifier 30, capacitors, and multiple LED circuits 324 with LEDs connected in series. Appx0087, Appx0134 [’400 Patent, Fig. 24, 18:4-11]. Figure 24 depicts a first string of LEDs 324 having five LEDs connected in series and a second string of LEDs 324 having five LEDs connected in series:



Appx0087 [’400 Patent, Fig. 24] (annotated in red, blue).

See Appx6304 [POR, 4].

B. The Claims of the ’400 Patent

Claim 7 of the ’400 Patent recites a lighting system including an LED circuit array comprising an LED circuit comprising a plurality of LEDs connected in series, a capacitor, a bridge rectifier with an AC mains voltage input, and a driver connected to the bridge rectifier providing a rectified AC voltage output to the LED circuit array. Claim 7 recites that a forward voltage of the LEDs of the LED circuit array matches the rectified AC voltage output of the driver. Appx0139 [’400 Patent, 27:48-62].

Dependent Claims 8-13 recite other limitations related to the lighting system of Claim 7.

Each of independent Claim 7 and dependent Claims 8-13 defines a lighting system that is novel and nonobvious over the prior art.

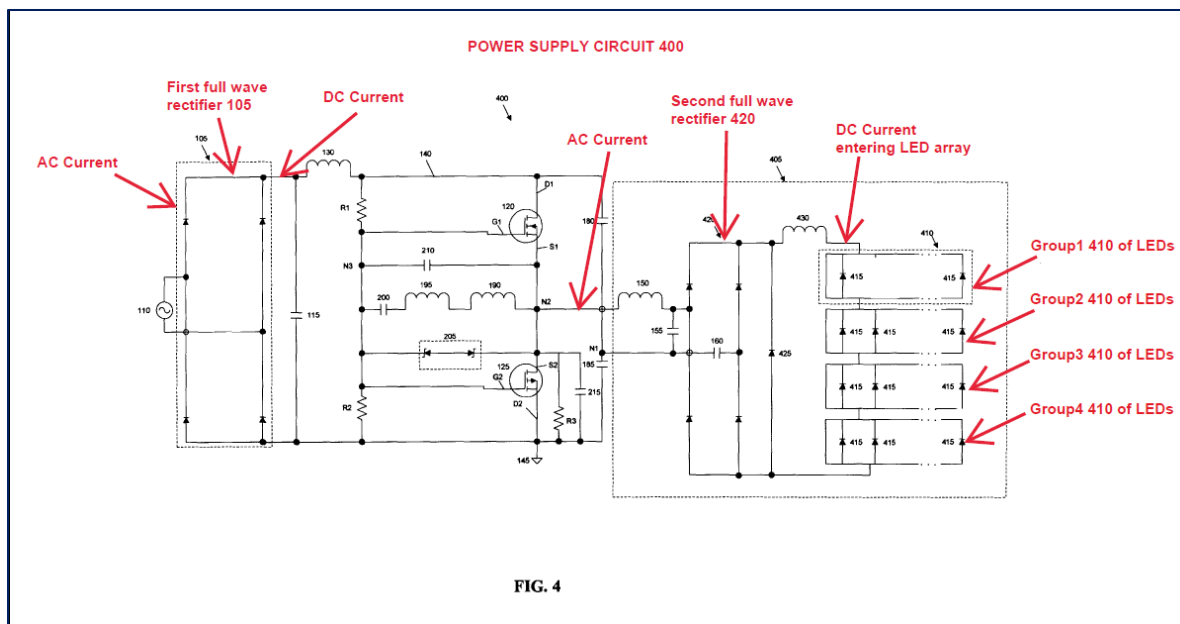
II. THE REFERENCES

A. Nerone (U.S. Pat. No. 6,411,045) (Ex. 1032)

Nerone, entitled “Light Emitting Diode Power Supply,” discloses a power supply circuit for an LED array. In Figures 1-3 of Nerone, the power supply circuit delivers AC voltage to the LED array. In Figure 4, the power supply circuit delivers DC voltage to the LED array. Appx2254-2257 [Ex. 1032 (Nerone), Figs. 1-4].

Figure 4 of Nerone depicts a power supply circuit 400 that is identical to the power supply circuit 100 of Figure 1 except for the resonant load circuit 404. The resonant load circuit 404 in Figure 4 is different in that it has a second full-wave bridge rectifier 420 that reconverts the AC current from the switches 120/125 back to DC current/DC voltage delivered by an inductor 430 to the LED load. Appx2260 [Nerone, 5:51-64].

The LED load comprises the four groups 410 of LEDs (group1-group4). Each group 410 has multiple LEDs 415 connected in parallel within the group and no LEDs connected in series within the group. No LEDs are connected in series between groups (e.g., no LED in group1 is connected in series with an LED in group2). Each of the groups 410 is connected in series with the other groups 410:



**Appx2257 [Nerone, Fig. 4] (annotated in red).
Appx5273 [Ex. 2001 (Ducharme Decl.), ¶ 60].**

See Appx6310-6311 [POR, 10-11].

Nerone discloses “[t]he groups 410 of the LEDs 415 are connected in series.” Appx2260 [Nerone, 5:59-60]. Thus, the LEDs within each group are connected in parallel only, and only the groups are connected in series. There are no individual LEDs connected in series.

B. Martin (U.S. Pat. Pub. 2004/0206070) (Ex. 1015)

Martin, entitled “Alternating Current Light Emitting Device,” describes a plurality of LEDs connected in series on a single substrate, where the LEDs may be connected directly to an AC voltage source. Appx1867, Appx1876 [Martin, Abstract, ¶ [0005]].

Martin describes that the number of LEDs connected in series should be chosen so that the peak voltage drop from an AC voltage source is less than the total maximum forward voltage of LEDs connected in series. Appx1877 [Martin, ¶ [0022]]. “The number of LEDs is chosen such that the maximum voltage across each individual LED during the peak in the alternating current cycle is low enough so as not to damage the LEDs,” in other words, the peak voltage is less than the “maximum forward voltage of 4.5V” for the LEDs. Appx1877 [Martin, ¶ [0022]]. For LEDs having an individual maximum forward voltage of 4.5 V and an AC source having a 169.7 V peak voltage,¹ Martin teaches the selection of thirty-eight (38) LEDs connected in series. *Id.* The selection of thirty-eight LEDs ensures that the peak value of the AC voltage output is less than the total maximum forward voltage across the LEDs to avoid damage to the LEDs.

III. PROCEDURAL HISTORY

The Petitioner filed the petition (“Petition”) for IPR2022-00149 on November 12, 2021, challenging Claims 7-20. Appx6034-6129 [Pet., 1-96]. The Patent Owner Preliminary Response (“POPR”) was filed on April 11, 2022. Appx6187-6216 [POPR, 1-30]. The Board instituted the IPR with its decision dated July 5, 2022.

¹ Martin has a typo indicating that the AC peak voltage is 180 V. Appx1877 [Martin, ¶ [0022]]. The parties agree that the correct value in Martin for the AC peak voltage is 169.7 V. Appx6314 [POR, 13]; Appx6402 [Reply, 15 n.10] (“It is undisputed that the peak voltage of 120V rms is 169.7V”).

Appx6233-6273 [Instn. Dec., 1-41]. The Patent Owner Response (“POR”) was filed on September 23, 2022. Appx6293-6371 [POR, 1-79]. The POR submitted a statutory disclaimer disclaiming Claims 14 and 18-20. Appx6360 [POR, 65]. The Petitioner filed a reply on December 16, 2022. Appx6386-6423 [Reply, 1-38]. The Patent Owner filed its sur-reply on January 27, 2023. Appx6436-6480 [Sur-reply, 1-35]. The oral hearing was conducted on March 28, 2023. The Board issued its Final Written Decision on June 26, 2023. The Patent Owner timely filed its appeal on August 25, 2023. Appx6566-6571 [NoA, 1-6].

The Petition asserted that Claims 7-20 of the ’400 Patent are unpatentable under thirteen different grounds (Grounds 1-13). Appx6047-6048 [Pet., 4-5]. The Patent Owner’s statutory disclaimer of Claims 14 and 18-20 removed Grounds 8 and 11-13 from the proceeding.

Ground 1 asserted that the combination of Nerone and Martin renders independent Claim 7 and dependent Claims 9 and 11 obvious. Appx6047 [Pet., 4]. The Board determined that Claims 7, 9, and 11 were obvious under this ground. Appx0039-0042 [FWD].

Ground 6 asserted that the combination of Zhang and Martin renders independent Claim 7 and dependent Claims 9-11 and 17 obvious. The Board determined that dependent Claim 17 was obvious. The Board determined that

independent Claim 7 and dependent Claims 9-11 were not obvious under this ground. Appx0053-0057 [FWD].

Ground 7 asserted that the combination of Zhang, Martin, and Morgan renders dependent Claim 8 obvious. The Board determined that Claim 8 was not obvious under this ground. Appx0058 [FWD].

This appeal addresses the Board's finding of unpatentability of independent Claim 7 and dependent Claims 9 and 11 based on Nerone and Martin (Ground 1). See Appx6047 [Pet., 4]. A reversal of the Board's determination in Ground 1 renders Claim 7-13 patentable.

This appeal also addresses the Board's consideration of the Martin reference in Grounds 1-6. The Martin reference is a U.S. patent application published after the priority date of the '400 Patent. A reversal of the Board's decision to apply Martin in Grounds 1-6 renders Claim 7-13 and 17 patentable.

SUMMARY OF THE ARGUMENT

The Board committed three errors in this IPR, each independently requiring reversal. These errors led the Board to hold Claims 7-13 of the '400 Patent unpatentable.

First, the Board erroneously construed “an LED circuit comprising a plurality of LEDs connected in series” in limitation 7(b) to encompass LED circuits or groups of LEDs being connected in series even if no individual LEDs are connected in series with other LEDs. The proper construction requires that a plurality of LEDs, not LED circuits or groups of LEDs, are connected in series.

In arriving at its incorrect construction, the Board failed to apply the ordinary meaning of the claim language and failed to consider other claims providing clear guidance on the meaning of “a plurality of LEDs connected in series” in Claim 7. The Board failed to consider the repeated descriptions in the specification of LEDs connected in series as referring to individual LEDs connected in series one to the other.

Upon *de novo* review, this Court should reverse the Board’s construction of an “LED circuit comprising a plurality of LEDs connected in series.” The proper construction is that a plurality of LEDs are connected in series, with the plurality of LEDs being connected one to another to form a single path for current.

Second, the Board’s construction of “a forward voltage of the LEDs ... matches the [] AC voltage output of the driver” in limitation 7(f) should be reversed. The Board’s construction incorrectly encompasses the driver providing a voltage output that is “less than” the forward voltage of the LEDs. There is no basis in the claim language or the specification for this construction that “matches” means “less than.” In applying *de novo* review, this Court should reverse the Board and hold that “matches” means “is equivalent within manufacturing tolerances to.”

Once either (or both) of those erroneous constructions is corrected, there is no remaining basis for holding Claim 7 obvious. The Court should reverse without remand and hold Claim 7 (and dependent Claims 8-13) patentable over the asserted grounds.

Third, the Board legally erred by holding a secret abandoned U.S. patent application, that published only *after* the challenged patent’s priority date, can be applied as prior art in an IPR. Section 311(b) of the Patent Statute provides that an IPR petition can challenge a patent “only on the basis of prior art consisting of patents or printed publications.”

Because the Martin application published only after the priority date of the challenged ’400 Patent, and never matured into a patent, it is neither a patent nor a prior art printed publication. Grounds 1-5 rely on Martin and therefore are legally

unavailable in this IPR. The Board’s holding otherwise should be reversed without remand.

ARGUMENT

I. STANDARDS OF REVIEW

Obviousness is a legal question based on underlying findings of fact. *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021). “We review the Board’s legal determination of obviousness de novo and its factual findings for substantial evidence.” *Outdry Technologies Corporation v. Geox S.P.A.*, 859 F.3d 1364, 1367 (Fed. Cir. 2017) (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015)).

The Federal Circuit reviews legal conclusions *de novo*. *AC Technologies S.A. v. Amazon.com, Inc.*, 912 F.3d 1358, 1364 (Fed. Cir. 2019) (“We consider de novo the Board’s legal conclusions.”); *In re Stepan Co.*, 868 F.3d 1342, 1345 (Fed. Cir. 2017). De novo review is conducted anew, without deference to the Board. *See Motionless Keyboard Co. v. Microsoft Corp.*, 486 F.3d 1376, 1379 (Fed. Cir. 2007).

This Court “review[s] questions of claim construction de novo.” *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1266 (Fed. Cir. 2021) (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015)); *see, e.g., PPC Broadband, Inc. v. Corning Optical Communications RF, LLC*, 815 F.3d 734, 739 (Fed. Cir. 2016).

This Court reviews questions of statutory interpretation *de novo*. *Genentech, Inc. v. Immunex Rhode Island Corp.*, 964 F.3d 1109, 1111 (Fed. Cir. 2020). *Belkin Intern., Inc. v. Kappos*, 696 F.3d 1379, 1381 (Fed. Cir. 2012) (“Statutory interpretation is a question of law that we likewise review *de novo*.”)

II. THE BOARD’S CONSTRUCTION OF LIMITATION 7(b) FOR “AN LED CIRCUIT COMPRISING A PLURALITY OF LEDs CONNECTED IN SERIES” IS LEGALLY ERRONEOUS.

A. Introduction

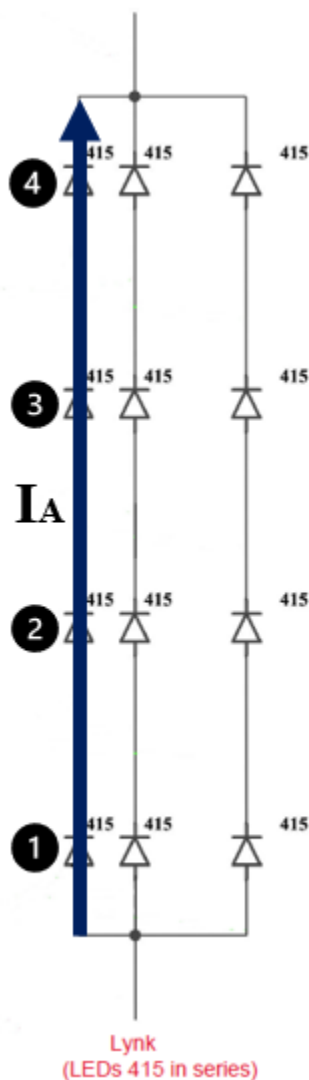
Limitation 7(b) recites “an LED circuit array comprising an LED circuit comprising a plurality of LEDs connected in series.” Appx0139 [’400 Patent, Cl. 7]. The parties dispute the plain and ordinary meaning of limitation 7(b). Appx6442 [Sur-reply, 1].

The Patent Owner’s construction requires that “at least two LEDs are connected in series.” Appx6443 [Sur-reply, 2]. The Patent Owner explained that “limitation 7(b) refers to **individual LEDs** connected in series, not **individual groups or circuits of LEDs** being [connected] in series” when there are no individual LEDs that are connected in series. Appx6324 [POR, 24] (emph. added). The Patent Owner also explained that “connected in series” means that the LEDs are connected end-to-end to form a single path for current such that the LEDs will always carry the same current. Appx6327 [POR, 27]; Appx6443 [Sur-Reply, 2].

There is no dispute as to the ordinary meaning of components being “connected in series.” The Patent Owner explained that components (e.g., LEDs) connected in series “have the same current path, and thus always carry the same current end to end through the series circuit.” Appx6443 [Sur-reply, 2] (citing Appx5508 [Ex. 2007 (McGraw-Hill Dictionary of Electronics and Computer Technology), 4]); Appx5287 [Ex. 2001 (Ducharme Decl.), ¶ 83]. *McGraw-Hill* defines components connected in series (*series*: “An arrangement of circuit components end to end to form a single path for current”; *series circuit*: “A circuit in which all parts are connected end to end to form a single path for current”). Appx5287 [Ex. 2007 (McGraw-Hill), 4]. See Appx6327 [POR, 27]. The Board does not dispute this meaning of “connected in series” provided by the Patent Owner. See Appx0019 [FWD]. Nor does the Petitioner or its expert. See Appx6388-6399 [Reply, 1-12]; Appx5058-5100 [Ex. 1107 (Baker Reply Decl.)]; Appx6444 [Sur-Reply, 3].

The Petitioner’s own expert agreed with this common understanding of LEDs being connected in series. Appx5430 [Ex. 2006 (Dep. Trans. Baker), 84:16-18] (“The only way that the two diodes [LEDs] will be in series is if they have the same current flowing, and they’re physically in series.”). See Appx6534 [Hearing Trans., 3/28/2023, 36:20-37:1] (citing same).

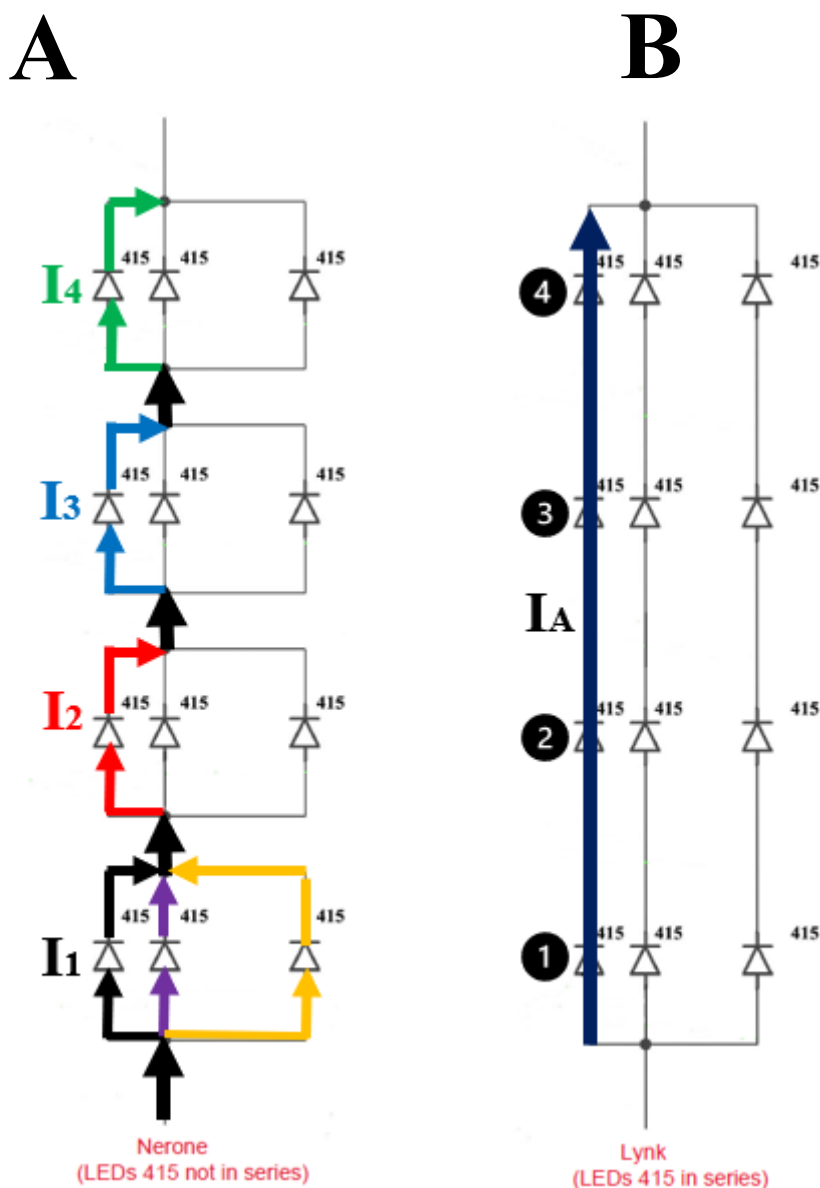
Patent Owner provided an example explaining what it means for LEDs to be connected in series pursuant to the undisputed ordinary meaning set forth in *McGraw-Hill*:



Appx6305 [POR, 25] (excerpted and modified Figure 4 of Nerone, further annotated in black).

In the above figure, the four LEDs (LED1, LED2, LED3, and LED4) are connected in series because they are connected one to the other to form a single path for current labeled $\mathbf{I_A}$. See Appx6327 [POR, 27]; Appx6443 [Sur-Reply, 2].

The Patent Owner also provided a diagram illustrating **groups** of LEDs being connected in series with other groups of LEDs, but where no individual LEDs are connected in series with other LEDs. See Appx6325 [POR, 25]. This example is illustrated on the left below (diagram A):



See Appx6325 [POR, 25] (Fig. 4 of Nerone, excerpted and further annotated).

Referring to diagram A, the current entering each group of LEDs² is split among the three LEDs in each group. For example, the current entering the bottom group is divided into three different current paths: a current path in **black**, a current path in **purple**, and a current path in **yellow**. The current path for LED1 is labeled **I₁**. After recombining at the top of the first group of LEDs, the current splits again as it enters the second group of LEDs, with the current path for LED2 being labeled **I₂**. The current path for LED3 is **I₃**, and the current path for LED4 is **I₄**. The Petitioner's own expert agreed that current entering a group of LEDs splits and then it recombines at the output of the group. Appx5368 [Ex. 2006 (Dep. Trans. Baker), 22:3-7].

Diagram A illustrates that the individual LEDs 1-4 are not connected in series because they do not have a single, common current path—they have different current paths (**I₁-I₄**). On the other hand, diagram B illustrates that LEDs 1-4 are connected in series because they are connected end-to-end to have a single, common current path (**I_A**). Diagram A illustrates that while **groups of LEDs** in Nerone may be connected in series with other **groups of LEDs**, there are no **LEDs** that are connected in series with **other LEDs**. Appx6326 [POR, 26].

² In diagram A, there are four groups of LEDs. Each group of LEDs has three LEDs connected in parallel, not in series. See e.g., Appx2257 [Ex. 1032 (Nerone), Fig. 4]; Appx5410 [Ex. 2006 (Dep. Trans. Baker), 64:20-24].

The Board erroneously construed limitation 7(b) as not requiring any LEDs to be connected in series. Appx0022-0024 [FWD]. The Board held that the limitation of “an LED circuit comprising a plurality of LEDs connected in series” encompasses a circuit/group of LEDs connected in series with another circuit/group of LEDs, even when no individual LED is connected in series to another LED to form a single current path. Indeed, the Board explicitly conceded that no individual LEDs in Nerone are connected in series: “We find that any two adjacent groups 410, which are part of the LED circuit in Nerone, correspond, to ‘a plurality of LEDs connected in series,’” notwithstanding “the fact that individual LEDs in any group 415 [sic: group 410]³ are **not connected in series.**” Appx0024 [FWD] (emph. added).

B. The Claim Language Demonstrates that the Board’s Construction of “an LED Circuit Comprising a Plurality of LEDs Connected in Series” is Erroneous

The claim construction inquiry starts with the ordinary and customary meaning of the term and focuses on the intrinsic evidence, consisting of (1) the claim language; (2) the specification; and (3) the prosecution history. *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1065 (Fed. Cir. 2018); *Knowles Elecs. LLC v.*

³ The Board inadvertently referred to “group 415” instead of “group 410.” The designator 415 refers to the individual LEDs, and 410 refers to a group of LEDs. Appx2260 [Nerone, 5:57-60] (“The resonant circuit further includes at least one group 410 of LEDs 415 connected in parallel ... The groups 410 of the LEDs 415 are connected in series.”)

Iancu, 886 F.3d 1369, 1373-74 (Fed. Cir. 2018). Extrinsic evidence such as technical dictionaries can be helpful in ascertaining the meaning of a claim term to those skilled in the art, provided the extrinsic evidence does not contradict the intrinsic evidence. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317-1318 (Fed. Cir. 2005) (“We have especially noted the help that technical dictionaries may provide ... the way in which one of skill in the art might use the claim terms.”).

1. The plain language of limitation 7(b) contradicts the Board’s construction.

The point of departure for the claim construction inquiry is the claim language itself. *Phillips*, 415 F.2d at 1314. See *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“First, we look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention.”).

Limitation 7(b) has a structure with three layers: an LED circuit array, an LED circuit, and a plurality of LEDs. Appx0139 [’400 Patent, Cl. 7 (27:49-50)]. The limitation defines relationships between the three layers: (1) there is an LED circuit array that comprises an LED circuit; (2) the LED circuit comprises a plurality of LEDs; and (3) the plurality of LEDs are connected in series. A POSITA would readily understand that it is the “plurality of LEDs” that are connected in series. Appx5284-5285 [Ex. 2001 (Ducharme Decl.), ¶ 78].

Additionally, the phrase “connected in series” modifies “plurality of LEDs,” not “LED circuit” or “LED array” which are recited as different claim elements.

Appx0139 [’400 Patent, 27:49-50]. It thus defines a relationship between the plurality of LEDs—they are “connected in series.” It does not define a relationship between LED circuits. Indeed, the claim could not be understood as defining a relationship between LED circuits because it only recites a single LED circuit (“an LED circuit”).

The Board’s construction disregards the claim language providing for “an LED circuit comprising a plurality of LEDs connected in series,” improperly rewriting it as “an LED circuit comprising a plurality of **LED circuits** connected in series” or “an LED circuit comprising a plurality of **groups of LEDs** connected in series.” However, the claim distinguishes between the “LED circuit” and the “plurality of LEDs.” Appx0139 [’400 Patent, Cl. 7, 27:49-50]. The claim provides that the “plurality of LEDs” are connected in series, not the “LED circuit” or “LED circuits.” Appx6443 [Sur-reply, 2]. The Board never addressed this point in the FWD. The applicant could have drafted the claim to recite that LED circuits are connected in series, such as: “a plurality of LED circuits connected in series.” Appx6324 [POR, 24]. The applicant could have drafted the claim to recite: “an LED circuit array comprising a plurality of LED circuits connected in series, each LED circuit comprising a plurality of LEDs.” Or the claim could have recited: “a plurality of groups of LEDs connected in series.” But the claim does not say any of these things. The claim was drafted to provide that the “LEDs”—not “LED circuits” or “groups

of LEDs”— are connected in series. The Board’s construction is erroneous as a matter of law on *de novo* review. *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1266 (Fed. Cir. 2021) (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015)). The Board’s construction is directly contrary to the claim language and is thus reversible error. *Ultratec, Inc. v. CaptionCall, LLC*, 872 F.3d 1267, 1273, 1275 (Fed. Cir. 2017).

The Board’s construction also improperly reads “plurality of LEDs connected in series” out of the claim because its construction does not require a single LED to be connected in series with another LED. See Appx0024 [FWD]. The Board’s construction thus rewrites the limitation to broaden its scope so that it encompasses “LED circuits connected in series” and “groups of LEDs connected in series” even in the absence of LEDs connected in series. See *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1105 (Fed. Cir. 1996) (improperly broadening scope of claims); *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1563 (Fed. Cir. 1991) (claim not to be construed to remove limitation).

2. The language used in other claims in the ’400 Patent demonstrates the Board’s construction is erroneous.

It is well established that the meaning of a claim can be discerned by reference to other claims in the patent. *Phillips*, 415 F.3d at 1314. The claims of the ’400 Patent recite various relationships in circuits. For example, an element may be “connected

in series” with another element, or an element may be “connected in parallel” with another element. See Appx0139 [’400, Cl. 7 (27:49-50)] (“connected in series”), Claim 14 (28:15) (“connected in parallel”). The element at issue could be a single LED or it could be an LED circuit. For example, Claim 14 of the ’400 Patent recites a relationship between LED circuits: “a plurality of LED circuits connected in parallel ... wherein each LED circuit comprises at least two LEDs.” Appx0139 [’400 Patent, Cl. 14, 28:15-16]. See Appx0428 [Ex. 1004 (Prosecution History), 40] (original Claim 14). Claim 14 thus defines a relationship between a plurality of **LED circuits**.⁴ Claim 7, on the other hand, defines a relationship between a plurality of **LEDs**, not LED circuits. Claim 14 confirms the meaning of the applicant’s choice of language: Claim 7 provides that the **LEDs** are “connected in series,” not that the LED circuits or the groups of LEDs are connected in series.⁵

The Board misapprehended the significance of the choice of language in Claim 7 versus Claim 14, asserting without explanation that the comparative language “sheds little, if any light” on claim construction. Appx0023 [FWD]. The Patent

⁴ The LED circuits are groups of LEDs because each LED circuit “comprises at least two LEDs.”

⁵ The Board asserts that the Patent Owner is rewriting the claim as “plurality of individual LEDs connected in series.” Appx0023 [FWD]. That is not the case. The Patent Owner refers to “individual” simply to illustrate the point that the claim recites that “LEDs”—not “LED circuits” or “groups of LEDs”—are “connected in series.”

Owner respectfully submits that the comparative language confirms the plain meaning of Claim 7, which is that LEDs are connected in series with other LEDs.⁶

C. The Specification of the '400 Patent Confirms that the Board's Construction is Erroneous

Phillips held that the patent specification is the primary source for ascertaining the meaning of the claims, always highly relevant, the single best guide to claim construction analysis, and is usually dispositive. *Phillips*, 415 at 1315. The specification of the '400 Patent is dispositive of the proper construction of limitation 7(b).

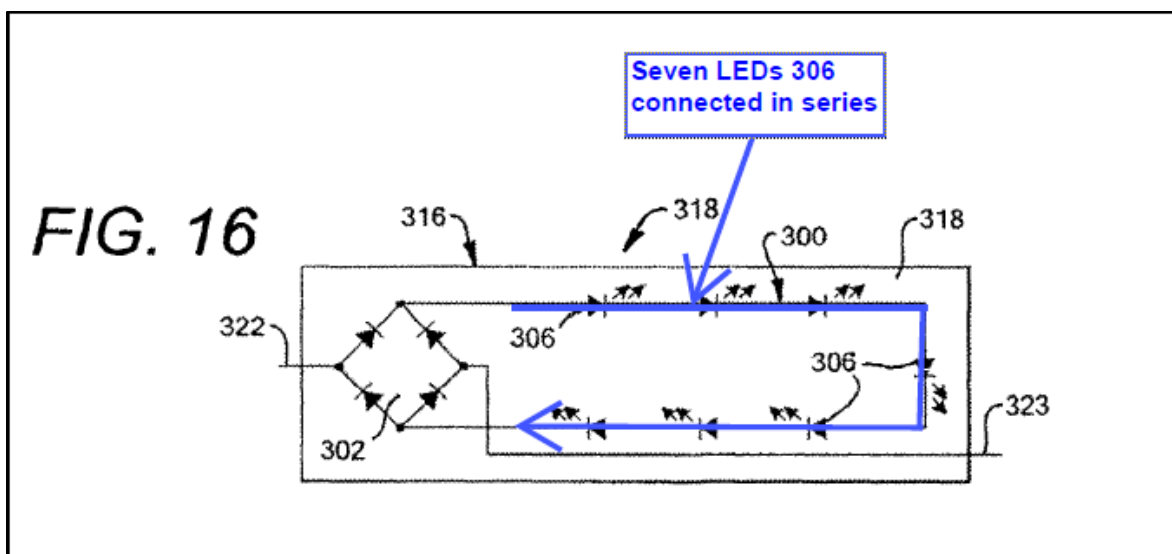
The Board did not (because it could not) cite to anything in the '400 Patent specification supporting its construction that “an LED circuit comprising a plurality of LEDs connected in series” encompasses a plurality of LED circuits being connected in series, or a plurality of groups of LEDs connected in series, without there being a single LED connected in series with another LED. Appx0015-0025 [FWD].

The '400 Patent discloses that individual **LEDs** can be connected in series, parallel, or opposing parallel. The '400 Patent also discloses that **LED circuits**

⁶ For avoidance of doubt, the proper construction is that there must be a plurality of LEDs connected in series. The claim is open format. The limitation does not exclude LED circuits or groups of LEDs being connected in series, provided that the requirement is satisfied that there are a plurality of LEDs connected in series.

(groups of LEDs) can be connected in series, parallel, or opposing parallel. Those two things are not the same. See Appx0139 [’400 Patent, Cl. 1] (“LEDs connected in series, parallel, or opposing parallel”) (27:22-23), Cl. 7 (“LEDs connected in series”) (27:50), Cl. 14 (“**LED circuits** connected in parallel, wherein each LED circuit comprises at least two LEDs”) (28:15-16), Cl. 21 (“at least two LEDs connected in series, parallel or opposing parallel”) (28:42-44). See Appx6389 [Reply, 2] (citing Cl. 1, 21); Appx6324 [POR, 14] (citing Cl. 14).

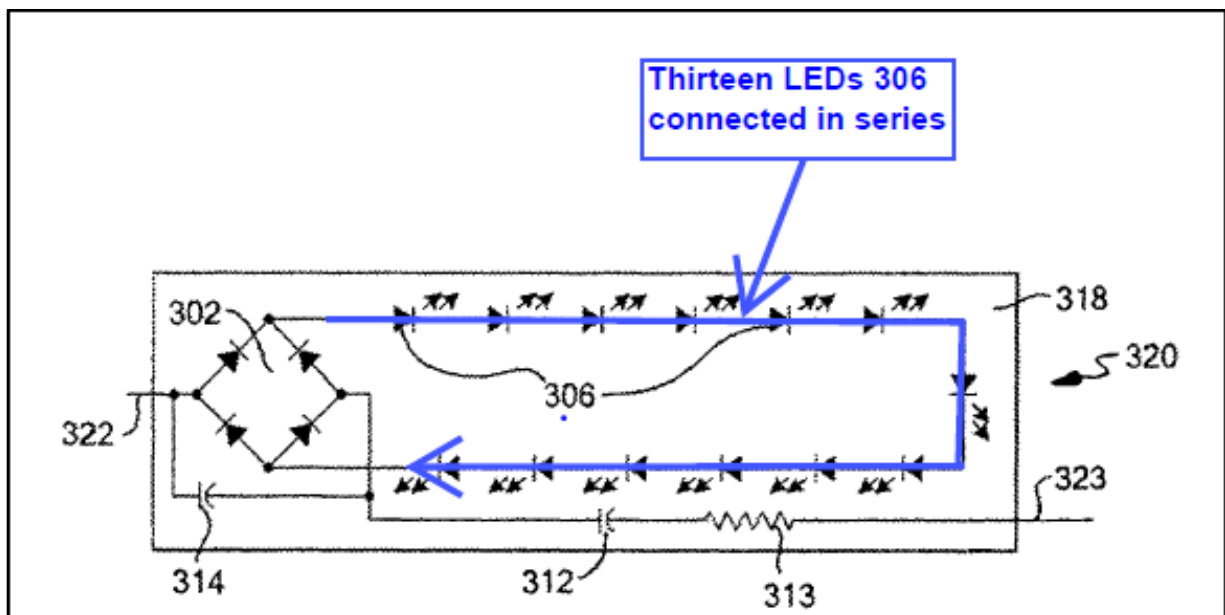
Figure 16 of the ’400 Patent discloses **individual LEDs** being connected **in series**. Appx6444 [Sur-reply, 3]. There are seven LEDs connected in series. The seven LEDs are connected in series because each LED is connected to the next LED such that they have a single path for current (like current flowing through a single wire), as indicated by the blue arrow:



Appx0082, Appx0133, [’400 Patent, Fig. 16 (annotated in blue), 16:21-23]
 (“the device 316 includes the device 300 as disclosed in FIG. 15 (with additional LEDs 306 added in series ...”).

See Appx6444 [Sur-reply, 3] (citing Appx0082, Appx0133 [’400 Patent, Fig. 16, 16:23]). See also Appx0082, Appx0133 [’400 Patent, Fig. 17 (seven LEDs connected in series), 16:50-51] (“multiple LEDs connected in series” in Figure 17). See Appx6444 [Sur-reply, 3].

Figure 18 of the ’400 Patent depicts a circuit with thirteen individual LEDs connected in series:

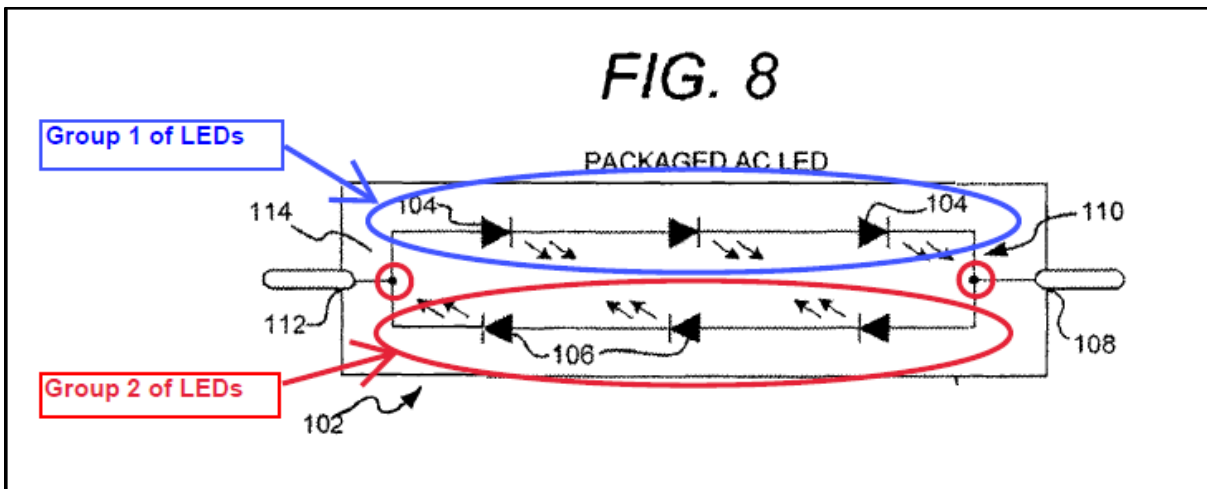


Appx0083, Appx0133 [’400 Patent, Fig. 18 (annotated in blue), 16:22-23] (“with additional LEDs 306 added in series”).

The thirteen LEDs are connected in series because each LED is connected to the next LED such that they have a single path for current, as indicated by the blue arrow.

Figure 8 of the ’400 Patent illustrates the distinction between groups of LEDs being connected in a particular configuration and individual LEDs connected in a particular configuration. Figure 8 discloses individual LEDs connected in series, as well as groups of LEDs connected in parallel. In Figure 8, the first group of LEDs (Group 1) is connected in parallel to the second group of LEDs (Group 2):⁷

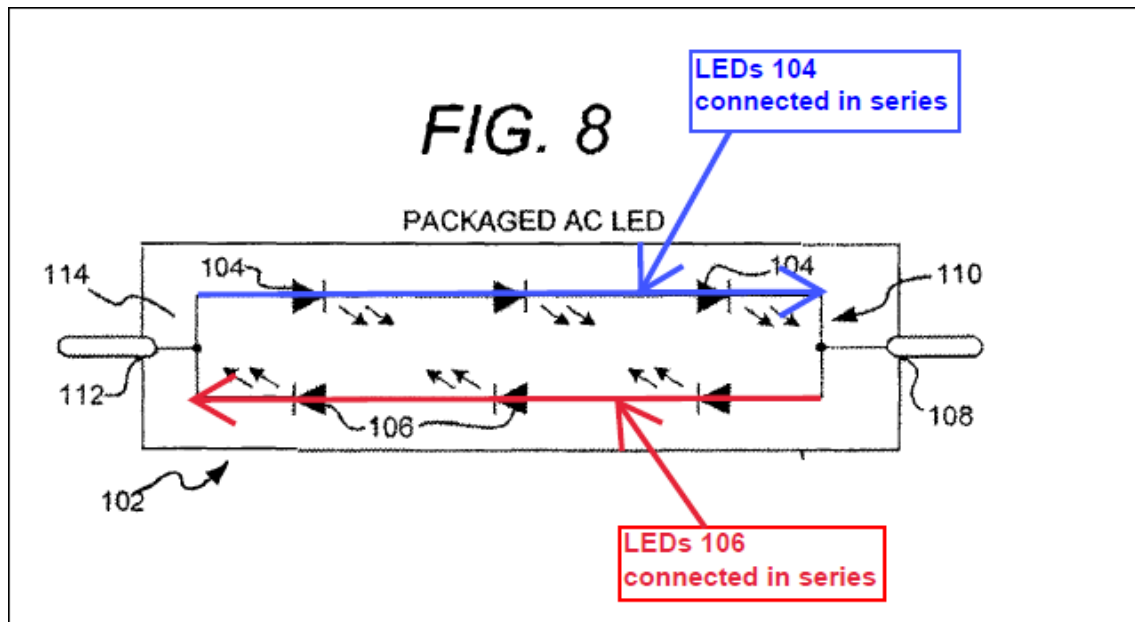
⁷ The configuration is referred to as “opposing” parallel because the two groups of LEDs have opposing polarity. This is not a matter of dispute.



Appx0080, Appx0133 [’400 Patent, Fig. 8, (annotated in red and blue), 15:15-17] (“a first series string of LEDs 104 [Group 1] connected to a second series string of LEDs 106 [Group 2] in opposing parallel configuration”).

See Appx6446-6447 [PO Sur-reply, 5-6].

Figure 8 also depicts **individual LEDs** connected in series with other LEDs. Referring to the annotated Figure 8 below, the top of the diagram (blue) depicts three individual LEDs 104 connected in series in a first series string. The bottom of the diagram (red) depicts three individual LEDs 106 connected in series in a second series string. In each string, the individual LEDs are connected one to the other so they form a single path for current (as indicated by the blue and red arrows).



Appx0080, Appx0133 [’400 Patent, Fig. 8 (annotated in red, blue), 15:15-16] (“a first series string of LEDs 104,” “a second series string of LEDs 106”).

See Appx6446-6447 [Sur-reply, 5-6].

The Patent Owner explained that “an LED circuit comprising a plurality of LEDs connected in series” is supported by Figure 8. Appx6447 [Sur-reply, 6]. This is because Figure 8 discloses a circuit “comprising a plurality of LEDs connected in series” (i.e., the first string of LEDs 104 connected in series and/or the second string of LEDs 106 connected in series). The fact that Figure 8 also depicts that two groups of LEDs (the two strings) are connected in parallel does not disturb that conclusion. This puts to rest the Petitioner’s incorrect assertion that the Patent Owner’s

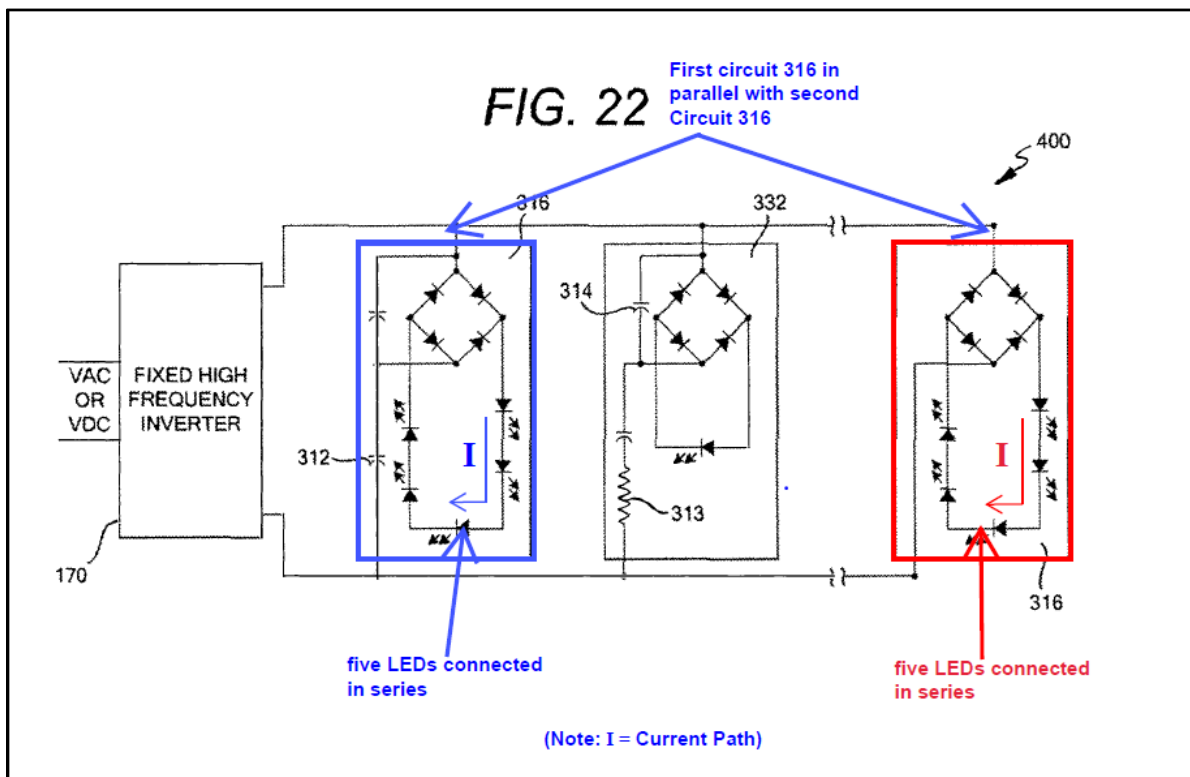
construction improperly excludes parallel connections involving LEDs. Appx0020 [FWD]; Appx6389 [Reply, 2].⁸

The Board cited Figure 22 in its final decision. See Appx0004 [FWD].⁹ Figure 22 is another disclosure of a plurality of LEDs connected in series. In Figure 22, there is a first string of five LEDs connected in series in the first circuit 316 (blue) and no LEDs in parallel, and a second string of five LEDs connected in series in the second circuit 316 (red) and no LEDs in parallel. In Figure 22, the first circuit 316 (first group of series-connected LEDs) and the second circuit 316 (second group of series-connected LEDs) are connected in parallel to each other. Limitation 7(b) is supported by Figure 22 because it includes an LED circuit comprising a plurality of LEDs connected in series (i.e., the series of five LEDs in the first circuit and/or the

⁸ The Petitioner's argument on reply that Figure 8 and other figures having parallel connections would be excluded by the Patent Owner's construction is wrong. Figure 8 and other figures including parallel connections support Claim 7 because they include LEDs connected in series. See, e.g., Appx0084 ['400 Patent, Fig. 21] (plurality of circuits 178, 180, 182 are in parallel; claim reads on Figure 21 because it includes circuit 180 with three LEDs connected in series). See Appx6447 [Sur-reply, 6].

⁹ The Board cited Figure 14 of the '697 Patent in its decision. Appx0020-0021 [FWD]. Like Figure 8, limitation 7(b) is supported by Figure 14 because it discloses a plurality of LEDs connected in series. However, the assertion that redrawn Figure 14 of the '697 Patent is "functionally identical" to Nerone's Figure 4 (see Appx0021 [FWD], figure at top) is misplaced. They are materially different. Figure 14 of the '697 Patent has groups of LEDs in **opposing polarity**, whereas the groups 410 of LEDs in Nerone are in **aligned polarity**. The circuits operate in completely different manners.

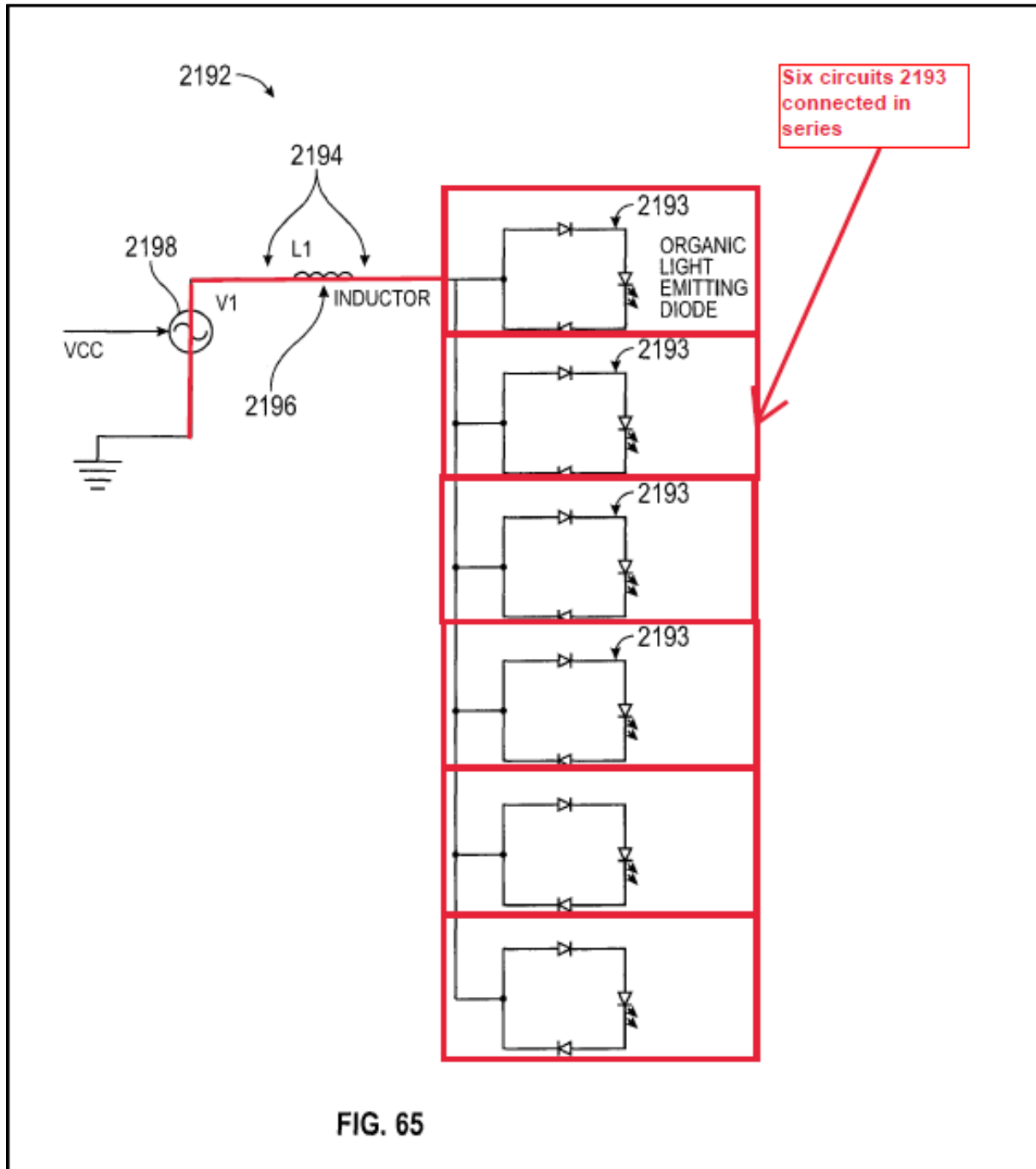
series of five LEDs in the second circuit). The Board agreed that Figure 22 discloses a “circuit comprising a plurality of LEDs connected in series.” Appx0004 [FWD] (“device 316 includes plural LEDs 306 connected in series”).



Appx0085 [’400 Patent, Fig. 22, (annotated in red, blue)].

The specification’s differentiation between (1) groups of LEDs (e.g., LED circuits) connected in series and (2) individual LEDs connected in series is further confirmed by Figure 65. Figure 65 depicts a plurality of circuits 2193, each having an LED. There are six circuits 2193 connected in series, as depicted in the annotated figure below. The specification of the ’400 Patent does not describe this configuration as having **LEDs** connected in series. Instead, the specification

discloses that the circuits 2193 are connected in series with the other circuits 2193. Appxp138 ['400 Patent, 26:21-23].



Appx0122 ['400 Patent, Fig. 65] (annotated in red).

See also Appx0121 ['400 Patent, Fig. 64] (circuits 2191 having LEDs connected in series with other circuits 2191).

Therefore, the '400 Patent repeatedly and consistently characterizes LEDs connected in series as meaning individual LEDs connected end to end such that they form a single path for current. The specification distinguishes between **individual LEDs** connected in series and **groups of LEDs** connected in series, just like Claims 1, 7, 14, and 21 of the '400 Patent.

The proper construction based on the existing record is clear. *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1266 (Fed. Cir. 2021) (cite omitted). The specification repeatedly and consistently characterizes LEDs connected in series as being individual LEDs being connected one to the other to form a single path for current, and distinguishes that from groups of LEDs connected in series with other groups of LEDs. *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1370 (Fed. Cir. 2016) (quoting *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1318 (Fed. Cir. 2014)); *Phillips*, 415 F.3d at 1321 (specification acting as a dictionary through consistent usage); *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004).

The Board's overly broad construction of limitation 7(b) as encompassing groups of LEDs connected in series with other groups without there being any individual LEDs connected in series should be reversed. The proper construction is that a plurality of LEDs are connected to each other in series, meaning that the LEDs

are connected end-to-end to form a single path for current. This Court should reverse without remand because the claim construction issue is dispositive of validity. See *Personalized Media Communications, LLC v. Apple Inc.*, 952 F.3d 1336, 1346 (Fed. Cir. 2020) (reversal without remand where Board determination of patentability was predicated on erroneous claim construction).

III. INDEPENDENT CLAIM 7 AND DEPENDENT CLAIMS 8-13 ARE PATENTABLE WHEN THE PROPER CLAIM CONSTRUCTION IS APPLIED FOR LIMITATION 7(b)’s “AN LED CIRCUIT COMPRISING A PLURALITY OF LEDs CONNECTED IN SERIES”.

The Board determined that Nerone met limitation 7(b) only because it discloses that groups 410 of LEDs are connected in series with other groups 410 of LEDs, even though no individual LED is connected in series with another LED.

A. The Board’s Determination Was Based on Nerone’s Disclosure that Each Group 410 of LEDs Is In Series With the Other Groups 410

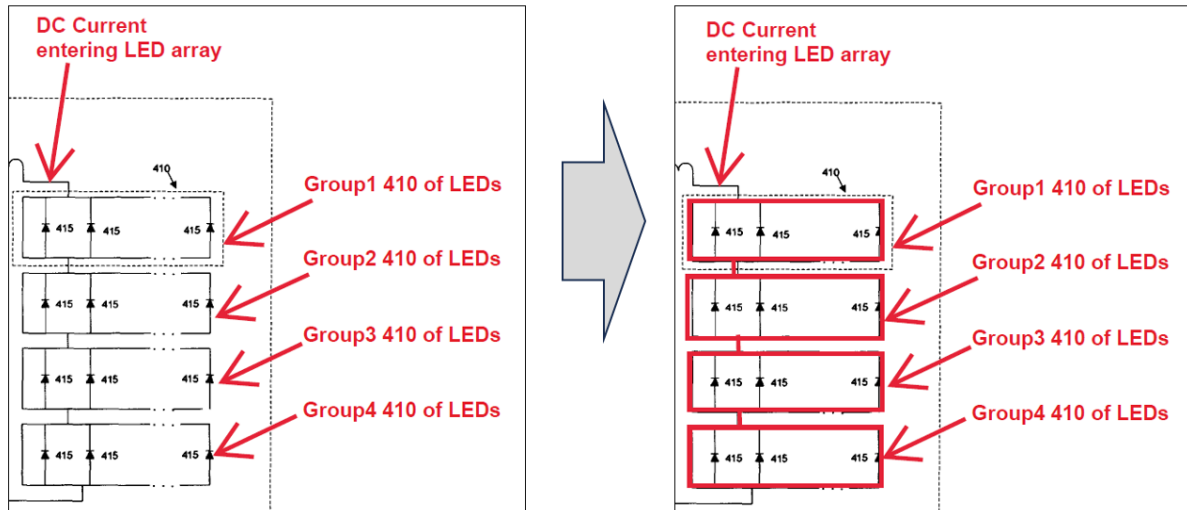
The Board found that limitation 7(b) was met based on Nerone’s disclosure that the groups of LEDs are connected in series: “The **groups 410** of the LEDs 415 **are connected in series.**” Appx2260 [Nerone, 5:59-60] (emph. added). See Appx0024 [FWD] (“To be clear, we find that Nerone discloses that resonant load circuit 405 ‘includes at least one group 410 of LEDs 415 ...and ‘groups 410 of the LEDs 415 *are connected in series.*’”) (original italics). The Board added: “We find that any two adjacent groups 410, which are part of the LED circuit in Nerone, correspond, to ‘a plurality of LEDs connected in series’” notwithstanding “[t]he fact that

individual LEDs in any group [410] ... are not connected in series.” Appx0024 [FWD].

Accordingly, the Board’s determination was based on its erroneous construction that limitation 7(b) encompasses groups of LEDs being connected in series with other groups of LEDs even though no single LED is connected in series with another LED. For this reason, this Court should reverse the Board’s determination that Claim 7 (and dependent Claims 8-13) are unpatentable.

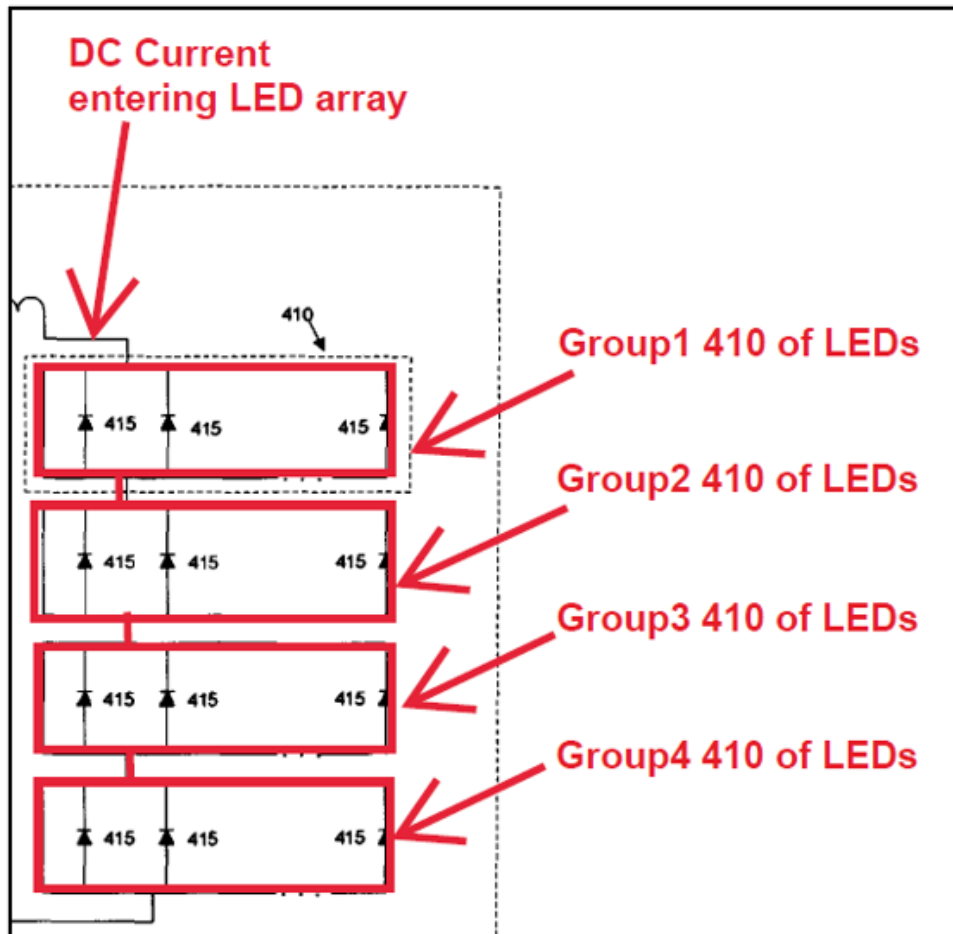
B. The Board Made No Finding That Any Single LED in Nerone Is Connected In Series With Another LED, And There Is No Evidence of Record To Support Such a Finding

The Board, correctly, did not find Nerone discloses individual LEDs connected in series. The Board’s decision did not cite any evidence that Nerone discloses any single LED being connected in series with another LED. See Appx0015-0025 [FWD]. For example, the Board referenced the Patent Owner’s annotation of Nerone’s Figure 4. See Appx0017 [FWD]. Figure 4 of Nerone from the POR is presented below, along with its equivalent on the right hand side:



**Appx2257 [Nerone, Fig. 4 (excerpted, annotated in red)];
see Appx6317 [POR, 17]; Appx6449 [Sur-Reply, 8].**

The figure on the right hand side is enlarged below for the convenience of the Court:



Appx2257 [Nerone, Fig. 4] (excerpted, annotated in red).

The Board found that Group1 is in series with the other groups Group2, Group3, and Group4. That the groups themselves are connected in series is reflected by the red box around each group and the red line connecting adjacent groups. As noted above, the Board did not find that any individual LED 415 is connected in series with another LED 415. Appx0015-0025 [FWD]; Appx6326 [POR, 26]; Appx6449 [Sur-reply, 8]; Appx5287 [Ex. 2001 (Ducharme Decl.), ¶¶ 81-82].

Indeed, the Petition did not provide any evidence that any single LED 415 is connected in series with another LED in Nerone. See Appx6054-6055 [Pet., 11-12].

The Petitioner’s reply provides confirmation, arguing that “[t]he **groups 410** of the LEDs 415 **are connected in series**”—not that any LED is connected in series with another LED, as required by limitation 7(b). See Appx6388 [Reply, 1] (orig. emph.).

Under cross-examination, the Petitioner’s own expert explicitly admitted Nerone does not disclose two LEDs (“diodes”) in series:

The first **group** is in series with the second **group**, but if you focus on one LED alone and forget the other ones, the only way that the two diodes will be in series is if they **have the same current flowing and they’re physically in series**. But in Nerone what is taught is the **groups** of LEDs 410 **are in series**.

Appx5430 [Ex. 2006 (Baker Dep. Trans.), 84:14-19] (emph., italics, underscore added).

Accordingly, this Court should reverse the Board’s determination regarding Claim 7 without remand and find that the Petitioner failed to prove unpatentability of Claim 7 (and dependent Claims 8-13).

IV. THE BOARD’S CONSTRUCTION OF “FORWARD VOLTAGE OF THE LEDs OF THE LED CIRCUIT ARRAY MATCHES THE RECTIFIED [] AC VOLTAGE OUTPUT OF THE DRIVER” IN LIMITATION 7(f) IS LEGALLY ERRONEOUS.

A. Introduction

Limitation 7(f) of independent Claim 7 recites that “a forward voltage of the LEDs of the LED circuit array matches the rectified [] AC voltage output¹⁰ of the

¹⁰ Limitation 7(f) refers to the “rectified input AC voltage output of the driver.” The parties agree that this refers to the “rectified output AC voltage” of the driver set

driver.” Appx0139 [’400 Patent, Cl. 7]. The Patent Owner treated the language per its plain and ordinary meaning, which is that the value of the total forward voltage of the LEDs is equivalent to the value of the rectified voltage output of the driver. Appx6531 [Hearing Trans., 3/28/2023, 33:12-13] (Patent Owner: “a POSITA would understand that matching means an equivalence within a manufacturing tolerance”).

The ground at issue for Claim 7 involves the combination of Nerone (Ex. 1032) with Martin (Ex. 1015). Appx6047, 6061-6070 [Pet., 4, 18-27]. The Petitioner concedes that Nerone does not meet the “matches” requirement and thus relies on Martin to meet limitation 7(f). Pet., 18-19. The problem with Martin is that rather than teaching that the driver’s voltage output matches the total forward voltage of the LEDs, Martin teaches that the driver’s voltage output is **less than** the forward voltage of the LEDs. Appx1877 [Martin, ¶ [0022]] (selecting thirty-eight LEDs so that the peak driver voltage output is less than the total maximum forward voltage); Appx6333-6334 [POR, 33-34]; Appx6063 [Pet., 20] (voltage delivered by the driver “is low enough”); Appx6401 [Reply, 14] (voltage is “low enough so as not to damage the LEDs” by being less than maximum forward voltage of each LED), Appx6402 [Reply, 15] (peak driver voltage output is less than “maximum forward voltage of 4.5V” for each LED).

forth in the previous limitation (limitation 7(e)). The Petitioner’s expert agreed. Appx0243 [Ex. 1002 (Baker Decl.), ¶ 119].

The Board recognized that Martin teaches the driver's voltage output is configured to be **less than** the forward voltage of the LEDs. Appx0031 [FWD]. When it came to construing "matches," Board conveniently found that it "also encompasses 'the rectified [] AC voltage output of the driver' that is **less than** 'a forward voltage of the LEDs of the LED circuit.'" Appx0036 [FWD] (emph. added). In short, the Board construed "matches" to encompass "less than" in addition to "equals." Upon *de novo* review, the Board's construction is incorrect.

B. The Claim Language Demonstrates that the Board's Construction Is Erroneous

The ordinary meaning of "matches" in the context of the design of LED lighting circuits is "equivalence." This common understanding is supported by the specification as discussed, *infra*. This understanding is explicitly acknowledged by the Board. Appx0036 [FWD] ("equivalence"). This is consistent with the claim language, which recites that the forward voltage of the LEDs "matches" the driver's rectified voltage output. Appx0139 ['400 Patent, 27:57-59].

C. The Specification of the '400 Patent Confirms that the Board's Construction is Erroneous

The Board determined that "matches" is broader than its ordinary meaning because it further encompasses "less than." Appx0036 [FWD] (citing Appx0126 ['400 Patent, 2:32-25]). The Board's justification for its redefinition of the term is based on a single statement in the background of the invention section of the '400

Patent. Appx0036 [FWD] (citing Appx0126 ['400 Patent, 2:32-25]). The cited passage describes a reference named Allen, and is reproduced below:

Allen discloses that for the forward voltage to be “matched,” in each series block, the peak input voltage must be less than or equal to the sum of the maximum forward voltages for each series block in order to prevent over-driving.

Appx0136 ['400 Patent, 2:31-35].

The inventor of the '400 Patent is not defining “matches” or “matched” here. The placement of quotation marks around the term (“matched”) does not indicate the term is being defined by the inventor. Quite the opposite. A POSITA would understand the inventor is quoting the language from Allen,¹¹ not setting forth a definition for “matches” for the '400 Patent. The inventor does not come close to “clearly set[ting] forth a definition of the disputed claim term” and “clearly express[ing] an intent to define the term.” *Pacing Technologies, LLC v. Garmin Intern., Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015) (citing *Thorner v. Sony Computer Entm't Am LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)).

While myopically focusing on one sentence in the background of the invention section, the Board's construction contradicted the remainder of the specification. The specification of the '400 Patent does not evince any effort by the inventor to act

¹¹ In other words, the inventor use “scare quotes” to indicate disagreement with Allen's use of “matched” to refer to less than.

as a lexicographer to redefine “matches” from its ordinary meaning. On the contrary, the specification provides concordance for the ordinary meaning of the term in this art. For example, the ’400 Patent states:

Another form of the invention is an LED lighting system comprising an LED circuit array having a plurality of different LED circuits each drawing the same or different currents, each having the same or different **forward operating voltages**, and each delivering the same or different lumen outputs that may be the same or different colors and an LED circuit driver coupled to the LED circuit array. The LED circuit driver delivering a relatively fixed frequency and voltage output allows for mixing and **matching** of LED circuits requiring **different forward voltages** and drive currents.

Appx0130 [’400 Patent, 10:26-36] (emph. added). This passage does not redefine “matches.”

Significantly, the ’400 Patent discloses that the number of LEDs can be selected so that the total forward voltage across the LEDs matches (equals) the voltage output of the driver:

Regardless of whether rectifier 302 and LEDs 306 are integrated or mounted in a single package or are discretely packaged and connected, in order to drop higher voltages any number of LEDs may be connected in series or parallel in a device to **match a desired voltage** and light output. For example, in a lighting device that is run off of a 120 V source and contains LEDs having a forward operating voltage of 3V each connected to a bridge rectifier having diodes also having a forward operating voltage of 3V each, approximately 38 LEDs may be placed in series to drop the required voltage.

Appx0133-0134 [’400 Patent, 16:64-17:7] (emph. added). See Appx6304-6305 [POR, 4-5]. This passage does not redefine “matches.”

In this passage, the voltage output of the driver after the bridge rectifier (which has two diodes) is $120\text{ V} - (2 * 6\text{ V}) = 114\text{ V}$. The total forward voltage drop of the 38 LEDs connected in series is $38 * 3\text{ V} = 114\text{ V}$. Accordingly, the forward voltage drop of the LEDs (114 V) connected in series equals the rectified voltage output of the driver (114 V).¹² Appx6304-6305 [POR, 4-5]. The Petitioner’s own expert agreed. Appx5092-5093 [Ex. 1107 (Baker Reply Decl.), ¶ 27] (“A person of ordinary skill in the art would have understood that this discussion in the ’400 patent explains that the bridge rectifier drops the voltage by 6V to provide a rectified AC voltage of 114V to 38 LEDs having a forward voltage drop of 114V.”).

Thus, the above passage does not redefine “matches.” On the contrary, it affirms the ordinary understanding of matches as “equivalence.” The construction of “matches” should be reversed on *de novo* review. No remand is required because it is clear from the intrinsic record that “matches” comports with its ordinary meaning and does not mean “less than.” *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1266 (Fed. Cir. 2021) (cite omitted).

¹² Petitioner’s counsel agreed with this understanding at the oral hearing. Hearing Trans., 23:11-17 (Petitioner: “this example that the patent is describing where you have 120 volts, and a rectifier that has 3 volts ... so it’s a 6-volt total drop. And then it talks about using 38 LEDs that would be sufficient for that, for the LEDs to have 3 volts. So what that is 120 on one side. With the AC, you have 6 volts. The output of the rectifier is 114 volts. Well, that output of that rectified driver, as its described there, would match the 114- volt drop of the LEDs -- 38 times 3.5 is 114.”).

The Board cites the '400 Patent at 9:49-51 as supporting its construction. Appx0036 [FWD] (citing Appx0130 ['400 Patent, 9:49-51]). That passage states that “strings of LEDs [are] connected together and driven direct with a high frequency AC voltage equal to or less than the total series voltage drop of the ... strings of LEDs.” This passage does not redefine “matches.” It does not even refer to “matches.” Indeed, it confirms the understanding of “matches” from the passage at 16:64-17:7, which uses the term to refer to equivalence. The inventor’s decision to refrain from using the term “matches” in the passage at 9:49-51 when referring to a voltage “being equal to or **less than**” confirms that “matches” does not encompass “less than.”

Considered as a whole, the specification teaches that in the context of Claim 7, “matches” means that the value of the rectified voltage output of the driver is equivalent within a manufacturing tolerance to the total forward voltage of the LED array. This is consistent with the ordinary meaning of “matches.” The specification does not redefine “matches” (as the Board implies); rather, it affirms its ordinary meaning through repeated and consistent characterization. *GPNE*, 830 F.3d at 1370; *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1318 (Fed. Cir. 2014); *Phillips*, 415 F.3d at 1315; *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004).

V. INDEPENDENT CLAIM 7 AND DEPENDENT CLAIMS 8-13 ARE PATENTABLE WHEN THE PROPER CLAIM CONSTRUCTION IS APPLIED FOR LIMITATION 7(f)’s “FORWARD VOLTAGE OF THE LEDs OF THE LED CIRCUIT MATCHES THE RECTIFIED [] AC VOLTAGE OUTPUT OF THE DRIVER”.

A. The Board’s Determination Must Be Reversed Because It is Based on the Application of the Board’s Erroneous Construction of “Matches”

The Board rejected the Patent Owner’s argument regarding limitation 7(f) because it was “based on the [Patent Owner’s] premise that ‘matches’ means an equivalence within a manufacturing tolerance.” Appx0035 [FWD]. The Board went on to determine its claim construction that “matches” encompasses “less than” in addition to “equivalence.” Appx0036 [FWD]. The Board then applied its erroneous claim construction to find that Martin teaches the delivery of an unrectified AC voltage output that is less than the total maximum forward voltage of the LEDs, and, accordingly, the combination of Martin with Nerone allegedly meets limitation 7(f). Appx0036 [FWD] (“Martin ... is teaching that the voltage drop across individual LEDs is less than a maximum voltage” ... “voltage drop of 147 V is much less than the peak voltage”), Appx0038 [FWD] (“Martin chooses the number of LEDs ‘such that the maximum voltage across each individual LED [during the peak in the alternating current cycle] is low enough so as not to damage the LEDs.’”).

The Board’s finding of obviousness is premised on the erroneous construction of limitation 7(f) that encompasses the rectified AC voltage output being less than

the forward voltage of the LEDs. Accordingly, the finding of unpatentability should be reversed for Claim 7 (and dependent Claims 8-13).

B. The Undisputed Record Evidence Demonstrates Claim 7 Is Patentable When The Correct Claim Construction Is Applied Because Martin Teaches That The Voltage Output Is Less Than The Forward Voltage Of The LEDs

This Court should reverse without remand. Applying the correct construction, the record evidence demonstrates that Martin as applied to Nerone fails to meet limitation 7(f) for a driver providing a rectified AC voltage output that is equivalent to the forward voltage drop of the LEDs. The Patent Owner explained—and the Board, the Petitioner, and the Petitioner’s own expert all agreed—that Martin teaches selecting the number of LEDs so that the peak AC voltage output of the driver is **less than** the 4.5 V maximum forward voltage of the LEDs. Appx0031 [FWD] (“Martin discloses selecting the number of LEDs to be 38 LEDs so that the voltage drop across each LED is less than the ‘maximum forward voltage’ of 4.5 V at the voltage peak”); Appx6332-6334 [POR, 32-34]; Appx5291-5292 [Ex. 2001 (Ducharme Decl.), ¶ 92]; Appx6454-6455 [Sur-reply, 13-14]; Appx6063 [Pet., 20]; Appx6401-6402 [Reply, 14-15]; Appx0246-0247 [Ex. 1002 (Baker Decl.), ¶ 123]. See Appx1877 [Martin, ¶ [0022]].

The Board and Petitioner rely **only on applying Martin** to Nerone to allegedly meet the “matches” limitation. Appx0038 [FWD]; Appx6064 [Pet., 21]. The Board

and Petitioner refer to extraneous references outside of Ground 1 (Nerone and Martin) to establish the POSITA's common knowledge for purposes of motivation to combine and reasonable expectation of success, **not to fill gaps** in the Nerone/Martin combination for meeting the "matches" limitation. See, e.g., Appx0031 [FWD] (Allen and Bockle used for motivation to combine and expectation of success), Appx0034-0035 [FWD] ("Petitioner further contends that is it not using these [extraneous] references for ... combining any of Cross, Allen, Bockle, or Birrell with [the Ground 1 references of] Nerone or Martin."). "We disagree with the Patent Owner that Petitioner is using any of Cross, Allen, Bockle, or Burrell for gap filling. As just discussed, these references are used to corroborate Dr Baker's testimony concerning the knowledge of a person of ordinary skill in the art." Appx0038 [FWD]. Accordingly, the extraneous references are not used to meet the claim limitation and cannot form an alternative basis for affirmance or remand.

Accordingly, Claim 7 is patentable because the combination of Martin and Nerone does not teach or suggest matching the AC voltage output to the forward voltage of the LEDs pursuant to limitation 7(f).

C. Besides Its Erroneous Construction of “Matches,” The Board Applied An Incorrect Construction of Limitation 7(f) That Reads Out The Requirement That A “Rectified AC Voltage Output” Matches the Forward Voltage of the LEDs

Limitation 7(f) provides that the forward voltage of the LEDs matches “the **rectified [] AC voltage output**” of the driver. It refers back to limitation 7(e) providing for “a driver connected to the bridge rectifier and configured to provide a **rectified output AC voltage** to the LED circuit array.” Appx0139 [’400 Patent, 27:54-56]. The Board acknowledged the Patent Owner’s point that Martin teaches selecting the number of LEDs based on an **unrectified** AC voltage output,¹³ not a **rectified** voltage output as required by limitation 7(f). See Appx0032 [FWD] (“Patent Owner next contends that Martin does not meet the recited voltage matching because it ‘selects the number of LEDs based on an **unrectified AC voltage** ..., not based on a **rectified** AC voltage’ as recited in limitation 7(f)”) (citing Appx6335 [POR, 35]) (emph. added).

The Board went on to hold that Martin’s teaching of an **unrectified** AC voltage output that is less than the forward voltage of the LEDs meets limitation 7(f). Appx0035-0038 [FWD]. In so doing, the Board erred by effectively construing limitation 7(f) as encompassing matching the forward voltage of LEDs to an unrectified AC voltage output. Put another way, the Board improperly reads

¹³ An unrectified AC voltage output is a pure AC voltage. AC mains is an example of an unrectified AC voltage. Appx0164 [Baker Decl., ¶ 25].

“rectified” out of the limitation. This is an error of claim construction to be reviewed *de novo*. *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1266 (Fed. Cir. 2021); *Ventana Medical Sys., Inc. v. Biogenex Laboratories, Inc.*, 473 F.3d 1173, 1181 (Fed. Cir. 2006) (reversing the district court’s claim construction because it improperly applied an implicit construction of “direct dispensing” to the claim term “dispensing”); *Carrum Technologies, LLC v. Unified Patents, LLC*, 2021 WL 3574209 at *6 (Fed. Cir. Aug. 13, 2021) (Board’s implicit interpretation of “a vehicle position in the turn” was erroneous).

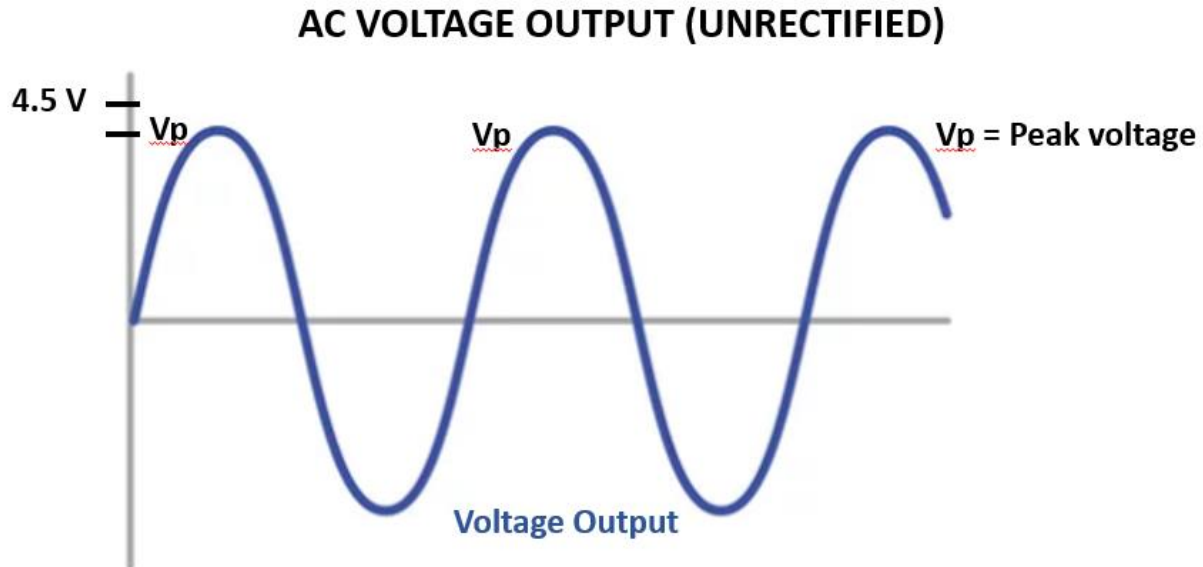
The claim construction exercise begins with the claim language. *Phillips*, 415 F.2d at 1314; *Vitronics*, 90 F.3d at 1582. The claim expressly states that the matching is performed in reference to a “rectified [] AC voltage output.” Appx0139 [’400 Patent, 27:57-59]. Additionally, the specification supports the plain meaning of the claim language in disclosing that a **rectified** AC voltage output of 114 V matches the forward voltage of 114 V for the LEDs. Appx0133-0134 [’400 Patent, 16:64-17:7]. See Section IV.C, *supra* (noting the Petitioner and Petitioner’s expert agree). See Appx5092-5095 [Ex. 1107 (Baker Reply Decl.), ¶ 27] (“A person of ordinary skill in the art would have understood that this discussion in the ’400 patent explains that the bridge rectifier drops the voltage by 6V to provide a **rectified** AC voltage of 114V to 38 LEDs having a forward voltage drop of 114V.”) (emph. added).

The Board’s as-applied claim construction—that limitation 7(f) encompasses matching to an unrectified AC voltage output—is erroneous. This Court should reverse the finding of unpatentability without remand because the record is clear that Martin only discloses determining the forward voltage of the LEDs based on the peak voltage of an unrectified AC voltage, not based on a rectified AC voltage. As relied upon by the Board and the Petitioner, Martin discloses selecting the forward voltage of the LEDs based on the unrectified AC voltage output of the driver. Appx0038 [FWD] (citing Martin, ¶ [0022]). See Appx1877 [Martin ¶ [0022]] (“The number of LEDs is chosen such that the maximum voltage across each individual LED during the peak in the **alternating current cycle**¹⁴ is low enough so as not to damage the LEDs.”). Accordingly, Martin does not teach or suggest selecting the number of LEDs to provide a forward voltage matching a rectified AC voltage output to meet limitation 7(f).

Thus, Martin as applied to Nerone does not meet limitation 7(f). To add further context, there is a significant, patentably distinct difference between matching the forward voltage of the LEDs to an unrectified AC voltage output compared to matching the forward voltage of the LEDs to a rectified AC voltage output. Martin discloses selecting the number of LEDs so that at the peak value V_p of the unrectified

¹⁴ Martin discloses that the AC voltage could be 120 Vrms, 60 Vrms, 240 Vrms, etc. *Id.* These are unrectified AC voltage signals, such as the AC mains provided by an electrical outlet in a home.

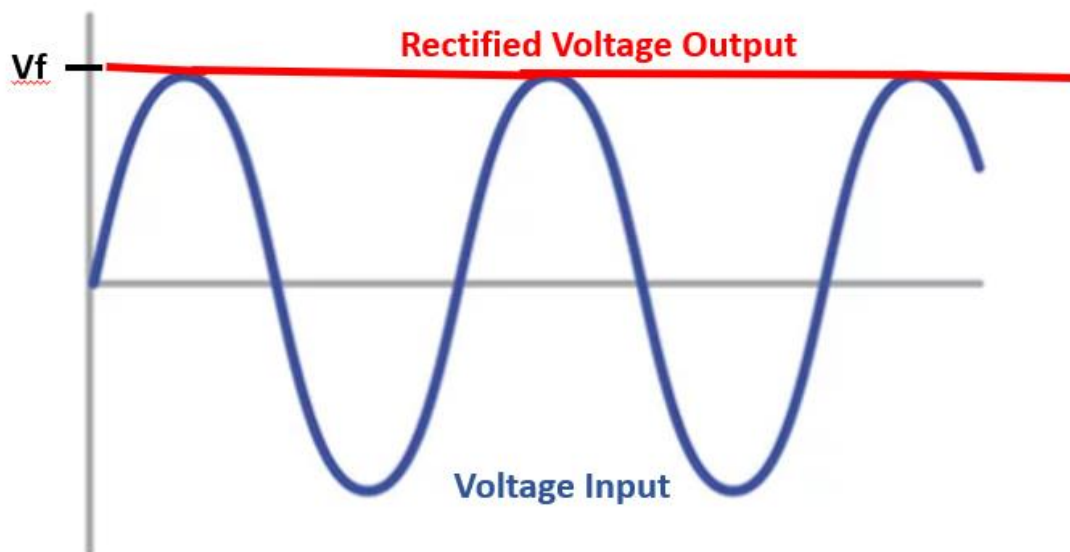
voltage output of the AC signal, the voltage drop across each LED is just under the “maximum forward voltage” of 4.5 V, as illustrated below:



See Appx0175-0176 [Ex. 1002 (Baker Decl.), ¶ 39]
(unrectified AC voltage on left of Fig. 3.21 from Appx2137 [Ex. 1030
(MASTERING ELECTRONICS by Watson), 39]).

See Appx1877 [Martin, ¶ [0022]]. This achieves Martin’s goal of preventing “damage [to] the LEDs.” *Id.*

On the other hand, limitation 7(f) of the claim recites that the **rectified** AC voltage output (**red below**) is matched to the forward voltage of the series-connected LEDs, V_f :

AC VOLTAGE OUTPUT (RECTIFIED)

V_f = Forward voltage of LEDs

See Appx0175-0176 [Ex. 1002 (Baker Decl.), ¶ 39] (rectified AC voltage on right of Fig. 3.21 from Appx2137 [Ex. 1030 (*Mastering Electronics* by Watson), 39)].

As illustrated in the above figure, the claimed matching provides that the rectified AC voltage output is matched to the forward voltage V_f of the LEDs¹⁵ so that the series-connected LEDs are continuously driven by a voltage output that delivers light. In contrast, Martin is providing an unrectified AC voltage output that varies between negative and positive values such that it is not continuously driving the LEDs to produce light. In fact, in Martin more than half of the time (e.g., when

¹⁵ The Petitioner's own expert confirmed that LEDs have a forward voltage V_f at which the LEDs "turn on" and emit light. Appx0177-0178 [Ex. 1002 (Baker Decl.), ¶¶ 41-43] (light is emitted by an LED when a forward voltage V_f in the range of 2-3 V is applied); Appx1877 [Martin, ¶ [0022]] (forward voltage V_f is 3.5 V).

the AC voltage is negative) the LEDs are not emitting light at all. There is a profound distinction between Martin’s teaching and the feature of limitation 7(f).

For the aforementioned reasons, the Court should reverse the Board’s determination regarding Claim 7 without remand and find that Claim 7 (and dependent Claims 8-13) are patentable.

D. The Board’s Determination That the Petitioner Can Meet the “Matches” Limitation Without Determining Any Numerical Value is an Error of Law

The Patent Owner repeatedly objected that the Petition and the Petitioner’s expert’s declaration were devoid of any analysis showing that the **value** of the rectified output voltage of Nerone (at inductor 430 in Figure 4 of Nerone) would match the **value** of the forward voltage across Nerone’s four groups 410 of LEDs in the proposed Nerone/Martin combination. Appx6331-6332 [POR, 31-32]; Appx6455 [Sur-Reply, 14].

The Board determined that the Petitioner did not have to make any numerical showing that Nerone/Martin combination meets the requirement that the value of the rectified AC voltage output of the driver “matches” the value of the forward voltage of the LEDs. Appx0037 [FWD]. This is a matter of claim construction reviewed *de novo*. *Qualcomm*, 6 F.4th at 1266.

A POSITA would readily understand that “a forward voltage of the LEDs of the LED circuit array matches the rectified [] AC voltage output of the driver” is only

satisfied by showing the **value** of the forward voltage of the LED circuit array matches the **value** of the AC voltage output of the driver. It can hardly be disputed that “matches” refers to the matching of values. The specification discloses matching as occurring when the 114 V rectified voltage output of a driver (i.e., a value) equals the 114 V forward voltage of the LEDs (i.e., a value). See Section IV.C; Appx0133-0134 [’400 Patent, 16:64-17:7]. Even the Board’s incorrect claim construction of “matches” is articulated in terms of the rectified AC voltage output having a value that is “less than” the value of the forward voltage of the LEDs. Appx0036 [FWD].

The Petitioner feigns outrage that “PO demands some *specific number* of LEDs and output voltage for the modified Nerone system.” Appx6400 [Reply, 13] (orig. italics). But that is precisely what the ’400 Patent discloses in connection with this limitation: A specific number of LEDs (38) provides a forward voltage (114 V) that matches the value for the rectified output voltage (114 V). See Section IV.C; Appx0133-0134 [’400 Patent, 16:64-17:7].

Therefore, the intrinsic evidence demonstrates that limitation 7(f) requires a matching of values. The Court should reverse on the basis of this erroneous claim construction.

Further, the record evidence would not support a finding that the Nerone/Martin combination meets the requirement in limitation 7(f) that the values in the Nerone/Martin combination match. The Board reasons that a POSITA designing a

circuit would take care that the circuit driver delivers enough voltage so as not to underdrive the LEDs, while not delivering too much voltage so as to overdrive the LEDs. Appx0036 [FWD] (citing Appx0243-0244 [Ex. 1002 (Baker Decl.) ¶ 120]). The Board reasons that a POSITA mindful of such “not too little, not too much” considerations would “have used these factors to apply the teachings of Martin to configure Nerone’s circuitry” so that the rectified voltage output of Nerone’s driver would “match” the forward voltage of the LEDs. Appx0037 [FWD]; see Appx6059 [Pet., 16] (depicting annotated Fig. 4 of Nerone with driver voltage output at inductor 430 provided to LED groups 410). That is quite a jump, too much of a jump, going from “not too little, not too much” to holding that a POSITA would precisely select the circuit components so that the **value** of the rectified voltage output would match the **value** of the forward voltage of the LEDs in the modified Nerone system.¹⁶ The Board and Petitioner are obliged to provide more than a hand-waving exercise to render Claim 7 of the ’400 Patent unpatentable.

The Board’s reasoning that a POSITA allegedly “would have been capable” of determining the number of LEDs in Nerone’s LED groups (Appx0037 [FWD]) goes to reasonable expectation of success; it does not establish that the Nerone/Martin

¹⁶ The Board cites the Petitioner’s expert, who provides no analysis showing that the value of the forward voltage drop of Nerone’s LEDs in the modified Nerone/Martin system would match the value of the rectified voltage output of Nerone. Appx6080-6082 [Pet., 37-38] (citing Appx0247-0248 [Ex. 1002 (Baker Decl.)], ¶ 124; Appx5096 [Ex. 1107 (Baker Reply Decl.)], ¶ 29)].

combination meets the requirement of limitation 7(f) that the value of the forward voltage drop of the LEDs matches the value of the rectified AC voltage output. The Board's follow-on assertion that it was "not necessary to provide" the details for the "proposed modification of Nerone" is unsustainable. *Id.* The Board fails to provide articulated reasoning tied to underlying evidence demonstrating that the proposed Nerone/Martin combination meets limitation 7(f). *In re Stepan Company*, 868 F.3d 1342, 1346 (Fed. Cir. 2017) (The Board must provide articulated reasoning with rational underpinnings that explains its conclusions as to how the prior art would be modified to correspond to the claimed invention.).

The Board's analysis on limitation 7(f) was carried out without getting down to the business of engaging the details of the proposed combination, such as by showing that the values of the voltages would match in the modified Nerone system. This nonspecific, results-oriented analysis was an exercise in impermissible hindsight reconstruction. *TQ Delta, LLC v. CISCO Systems, Inc.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019); *see Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1368 (Fed. Cir. 2012) ("We must be careful not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention.").

For the aforementioned reasons, the Court should reverse the Board’s determination regarding Claim 7, and hold that Claim 7 and dependent Claims 8-13 are not unpatentable, without remand.

VI. THE BOARD’S DECISION MUST BE REVERSED AS TO CLAIMS 7-13 AND 17 BECAUSE THE MARTIN REFERENCE OF GROUNDS 1-6 IS NOT “PRINTED PUBLICATION” PRIOR ART WITHIN THE MEANING OF 35 U.S.C. § 311(b)

The Board held claims 7-13 and 17 unpatentable relying on Martin, U.S. Pat. Pub. No. 2004/0206970, in combination with other references. Appx0007, Appx0068 [FWD] (Grounds 1-6). But a patent can be challenged in an IPR “only on the basis of prior art consisting of *patents* or *printed publications*,” 35 U.S.C. § 311(b) (emph. added)—which limits available prior art, as a matter of law, to only references that are themselves “a *prior art* patent or *prior art* printed publication.” *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1375 (Fed. Cir. 2022) (emph. added). Martin is neither. It is undisputed that Martin is not a “patent”; it is a patent *application* that was abandoned and never issued as a patent. And Martin is not a “prior art printed publication,” because it was not publicly accessible until it was published on October 21, 2004—well *after* the ’400 Patent’s February 25, 2004, priority date. Appx1867 [Martin, 1, (item (43))]. See Appx6049 [Pet. 6] (“the critical date for the ’400 Patent is February 24, 2004.”). Martin thus cannot serve under § 311(b) as a basis of the Petitioner’s IPR. The holdings of unpatentability based on Martin must be reversed.

A. Martin Is Not a Prior Art “Printed Publication” Because It Was Not Publicly Accessible Until After the ’400 Patent’s Priority Date

This Court has repeatedly held that “[t]he statutory phrase ‘printed publication’ . . . mean[s] that before the critical date [of the challenged patent] the reference must have been *sufficiently accessible to the public* interested in the art.’” *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (emph. added); *accord, e.g., Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772-74 (Fed. Cir. 2018) (affirming finding in IPR that reference was not “printed publication” because it “was not publicly accessible before the critical date”); *In re Lister*, 583 F.3d 1307, 1314, 1311-17 (Fed. Cir. 2009) (manuscript was not “printed publication” because it was not “publicly accessible” before critical date); *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004) (“[T]hroughout our case law, public accessibility has been the criterion by which a prior art reference will be judged for the purposes of [the] . . . ‘printed publication’ inquiry.”); *B/E Aerospace, Inc. v. C & D Zodiac, Inc.*, 709 F. App’x 687, 697-98 (Fed. Cir. 2017) (affirming finding in IPR that document was not “prior art printed publication” because petitioner “did not establish public accessibility . . . before the priority date”).

As this precedent makes clear, “‘public accessibility’” is “the touchstone in determining whether a reference constitutes a ‘printed publication.’” *Acceleration Bay*, 908 F.3d at 772 (additional quotation marks omitted). An IPR “petitioner . . . ha[s] the burden to prove [a reference] is a printed publication.” *Id.* To do so, the

petitioner must show that the reference was, before the critical date, “‘made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.’” *Id.*

Martin was not publicly accessible before February 24, 2004, critical date of the ’400 Patent. It was published by the PTO eight months later, on October 21, 2004. Appx1867 [Martin, 1]. Before that, Martin was confidential and not accessible by the public—indeed, it was legally required to “be kept in confidence” by the PTO. 35 U.S.C. § 122(a)-(b) (patent applications “shall be kept in confidence by the Patent and Trademark Office” until publication 18 months after filing); *see Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1333-34 (Fed. Cir. 2009) (document shared with others was not yet “printed publication” because it was circulated under expectation of confidentiality based on “professional norms”). Here, the Petitioner never attempted to prove—and the Board never purported to find—otherwise. Because Martin was not publicly accessible before the ’400 Patent’s critical date, it is not a “prior art printed publication” and could not serve as a basis for challenging the patent in this IPR. § 311(b). *Qualcomm*, 24 F.4th at 1375; *see Acceleration Bay*, 908 F.3d at 772.

B. The Board Misconstrued the Statute

Despite Martin’s undisputed lack of public accessibility before the critical date, the Board found it was a permissible basis for this IPR because, under pre-AIA

§ 102(e)(1), an “application for patent” may serve as prior art as of its filing date. Appx0010-0012 [FWD]. But whether Martin could be prior art as an “application for patent” under pre-AIA § 102(e)(1) is irrelevant under AIA § 311(b). Pre-AIA § 102 identifies various categories of prior art, including (1) “patent[s],” (2) “printed publication[s],” (3) inventions “in public use or on sale,” (4) inventions “known or used by others,” and (5) “application[s] for patent.” 35 U.S.C. § 102. But it is well-established that many of those prior art categories are unavailable in IPR. AIA § 311(b) specifies that only two categories are permissible bases for challenging a patent in an IPR: “patents” and “printed publications.” § 311(b). The “other types of prior art identified in § 102”—including pre-publication patent applications covered by § 102(e)(1)—may be asserted in (for example) infringement litigation, but cannot be a basis for an IPR. *Qualcomm*, 24 F.4th at 1376.

As pre-AIA § 102 makes clear, “printed publication[s]” and “application[s] for patent” are distinct terms with distinct meanings. *See Res-Care, Inc. v. United States*, 735 F.3d 1384, 1389 (Fed. Cir. 2013) (“Congress’s ‘use of different terms . . . generally implies that different meanings were intended.’”). Accordingly, courts have long recognized that a “mere application for patent” is neither a “printed publication” nor a “patent.” *Brown v. Guild*, 90 U.S. 181, 224 (1874) (citing Act of July 4, 1836, ch. 357, § 7, 5 Stat. 117, 119-20); *see In re Wertheim*, 646 F.2d 527, 532 (CCPA 1981) (application “was not . . . a patent or printed publication”);

Interurban Ry. & Terminal Co. v. Westinghouse Elec. & Mfg. Co., 186 F. ____ 166, 168 (6th Cir. 1911) (“[a]bandoned applications for patents” cannot “be classed among printed publications” because they are not “published by the Patent Office”); *Lyman Ventilating & Refrigerator Co. v. Lalor*, 15 F. Cas. 1163, 1164 (C.C.S.D.N.Y. 1874) (Blatchford, J.) (rejected patent application “has not the same effect of a printed publication” because it is not “made accessible to the public generally”). That remains true today: post-AIA § 102 continues to differentiate between “printed publication[s]” and “application[s] for patent.” § 102(a)(1)-(2).

When Congress limited IPRs to “only prior art consisting of patents or printed publications,” it excluded other categories of prior art from the permissible bases for an IPR. § 311(b). Pre-publication “application[s] for patent” are among those excluded categories. § 102(e)(1). The Board erred by ignoring § 311(b)’s strictures and by conflating distinct categories of prior art.

Rather than grapple with § 311(b)’s plain language, the Board focused on the AIA’s now-obsolete covered business method patent provision, which limited CBM challenges to “‘prior art that is described by [pre-AIA] section 102(a).’” Appx0011 [FWD] (quoting Pub. L. No. 112-29, § 18(a)(1)(C)(i), 125 Stat. 284, 330 (2011)). The Board reasoned that, “unlike CBMs, IPRs are not limited to prior art challenges solely under § 102(a),” and so (the Board concluded) IPRs necessarily may include challenges based on patent applications under § 102(e)(1). *Id.* That makes no sense.

The IPR statute does not use the same language as the CBM statute for a simple reason: Congress chose to limit IPRs to “prior art consisting of patents or *printed publications*,” §311(b) (emph. added), and the CBM statute’s language would not accomplish that. Pre-AIA § 102(a) is *not* limited to patents and printed publications; it also includes, *e.g.*, inventions “known or used by others in this country.” § 102(a). Nor are patents and printed publications confined to pre-AIA § 102(a); they also appear in pre-AIA § 102(b). The Board erred in “invent[ing] an atextual explanation for Congress’s drafting choices when the statute’s own terms supply an answer.” *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1357 (2018).

The Board refused to follow the many cases holding that “printed publication” prior art must be publicly accessible before the challenged patent’s critical date. For example, it dismissed the Patent Owner’s citation of *Samsung Electronics Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363 (Fed. Cir. 2019), because “that case deals with public accessibility under § 102(b).” Appx0011 [FWD]. But that is precisely the point: To determine “what constitutes a ‘printed publication’” that can be asserted in an IPR, *Infobridge* looked to the meaning of the “printed publication” statutory language in pre-AIA § 102(b), and held that the “statutory text . . . impos[es] two requirements: (1) that a putative prior art reference be printed and (2) that the reference be published, *i.e.*, *accessible to the public*.” 929 F.3d at 1368-69 (emph. added). The reason *Infobridge* “deals with public accessibility” (Appx0011 [FWD])

is because public accessibility is a requirement for a prior art “printed publication.” And because Martin *lacked* public accessibility as of the critical date of the ’400 Patent, it is not a prior art printed publication.

Insofar as the Board believed that “printed publication” means something different in § 102 than in § 311(b), nothing supports that view. This Court has repeatedly given “printed publication” the same meaning in IPRs governed by § 311(b) as it has in other cases. *See, e.g., Infobridge*, 929 F.3d at 1368 (citing *In re Wyer*, 655 F.2d 221, 225 (CCPA 1981)); *Jazz Pharms., Inc. v. Amneal Pharms., LLC*, 895 F.3d 1347, 1355 (Fed. Cir. 2018) (citing *In re Hall*, 781 F.2d 897, 898-99 (Fed. Cir. 1986)); *Acceleration Bay*, 908 F.3d at 772-74 (citing *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1380 (Fed. Cir. 2012)); *Klopfenstein*, 380 F.3d at 1350; *Cronyn*, 890 F.2d at 1161. Properly so: The “normal presumption” is that “when Congress uses a term in multiple places within a single statute, the term bears consistent meaning throughout.” *Azar v. Allina Health Servs.*, 139 S. Ct. 1804, 1812 (2019). Under post-AIA § 102, like pre-AIA § 102, “printed publications” must be “publicly accessible.” *Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1370 n.3, 1373 (Fed. Cir. 2021). The term is properly given the same meaning when it appears elsewhere in the statute, including § 311(b).

Congress, moreover, is “presumed to be aware of judicial decisions interpreting statutory language.” *Qualcomm*, 24 F.4th at 1375. When Congress uses a phrase

with a settled judicial interpretation—like “printed publication”—it presumptively “adopt[s] the earlier judicial construction of th[e] phrase.” *Helsinn Healthcare S.A. v. Teva Pharms. USA, Inc.*, 139 S. Ct. 628, 633-34 (2019); see *Taggart v. Lorenzen*, 139 S. Ct. 1795, 1801 (2019) (“When a statutory term is obviously transplanted from another legal source, it brings the old soil with it.” (internal quotation marks omitted)). At the time of the AIA’s enactment—and long before—“public accessibility” was understood to be “the ‘touchstone in determining whether a reference constitutes a ‘printed publication.’” *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 866 (Fed. Cir. 2010); see also *Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 974 (Fed. Cir. 2010); *Lister*, 583 F.3d at 1311; *Klopfenstein*, 380 F.3d at 1349. And “printed publication[s]” had been understood for over a century to exclude “application[s] for patent.” *Brown*, 90 U.S. at 224. When Congress used the term “printed publication” in §311(b), it adopted that longstanding judicial construction.

While ignoring the many precedential decisions holding that “printed publications” must be publicly accessible before the critical date of the patent, the Board cited a non-precedential decision, *Purdue Pharma L.P. v. Iancu*, 767 F. App’x 918 (Fed. Cir. 2019). Appx0011-0012 [FWD]. But *Purdue* never addressed whether patent applications not published before the critical date are prior art “printed publications” under § 311(b). The patent owner did not raise that issue. The term

“printed publication” appears nowhere in the opinion. The patent owner’s argument that a given patent application was not prior art was “based entirely on its contention that the [challenged] claims . . . ha[d] written description support in [a] provisional” and thus were entitled to the provisional’s earlier priority date. *Purdue*, 767 F. Appx at 925. *Purdue* simply does not bear on the question at hand.

In cases not cited by the PTAB, this Court has treated *patents* as having the effective date of their application pursuant to § 102(e)(2) in an IPR. *See, e.g., Becton, Dickinson & Co. v. Baxter Corp. Englewood*, 998 F.3d 1337, 1344-45 (Fed. Cir. 2021); *Merck Sharp & Dohme Corp. v. Microspherix LLC*, 814 F. App’x. 575, 578-80 (Fed. Cir. 2020). But that question was not disputed in those cases. And it is a different question. An earlier-filed, later-published “application for patent” like the Martin reference in this IPR is not one of the specified categories of prior art that may be asserted. § 102(e)(1); § 311(b).

The Board’s decision cannot be sustained simply because Martin may be a *type* of prior art (“application for patent”) that is later published. Prior art serving as the basis of an IPR must be “a prior art patent or prior art printed publication.” *Qualcomm*, 24 F.4th at 1375. As this Court has emphasized, IPRs may be based only on “‘patents or printed publications’ *existing at the time of the patent application*.” *Id.* at 1374 (cite omitted) (orig. emph.). Martin is not a prior art printed publication

as to the '400 Patent because it was not publicly available before the patent's critical date.¹⁷

The plain statutory language of § 311(b) restricts IPRs to challenges based on “patents or printed publications,” excluding earlier-filed, later-published patent applications. Martin is neither a patent nor a prior art printed publication. Accordingly, the unpatentability findings as to Claims 7-13 and 17 (Grounds 1-6) should be reversed.

¹⁷ As *Qualcomm* explained, applicant-admitted prior art may be considered in an IPR “to some extent” as evidence “for establishing the background knowledge possessed by a person of ordinary skill in the art.” *Id.* at 1376. But since it is not a “prior art patent or prior art publication,” it cannot be used as a “basis” for the IPR. *Id.* It is undisputed here that Martin is a stated reference in Grounds 1-6, and thus forms a basis for the IPR. See Appx6047-6048 [Pet., 4-5].

CONCLUSION

For the reasons set forth above, the Board's decision and judgment should be reversed.

Respectfully submitted,

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CERTIFICATE OF FILING AND SERVICE

I hereby certify that on this 10th day of January, I caused this Brief of Appellant to be filed electronically with the Clerk of the Court using the CM/ECF System, which will send notice of such filing to the following registered CM/ECF users:

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January 10, 2024

ADDENDUM

Paper 33. Final Written Decision (June 26 2023) Appx0001

Ex. 1001 US Patent No. 10,687,400, Miskin et al.
(June 16 2020).....Appx0075