

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADVANCED LIGHTING CONCEPTS LLC,
Petitioner,

v.

MATE LLC,
Patent Owner.

IPR2023-01259
Patent 9,591,713 B2

Before KRISTINA M. KALAN, KIMBERLY MCGRAW, and
JAMES J. MAYBERRY, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

Advanced Lighting Concepts LLC (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1, 2, 5, 10, 12, and 13 of U.S. Patent No. 9,591,713 B2 (Ex. 1001, “the ’713 patent”). Paper 1 (“Pet.”). In lieu of filing a Preliminary Response, mate LLC (“Patent Owner”) filed a Waiver of Preliminary Response. Paper 7.

To institute *inter partes* review, we must determine that the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon considering the Petition and the evidence of record, we determine that Petitioner has not shown a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the claims challenged in the Petition. Accordingly, we do not institute *inter partes* review.

A. *Related Proceedings*

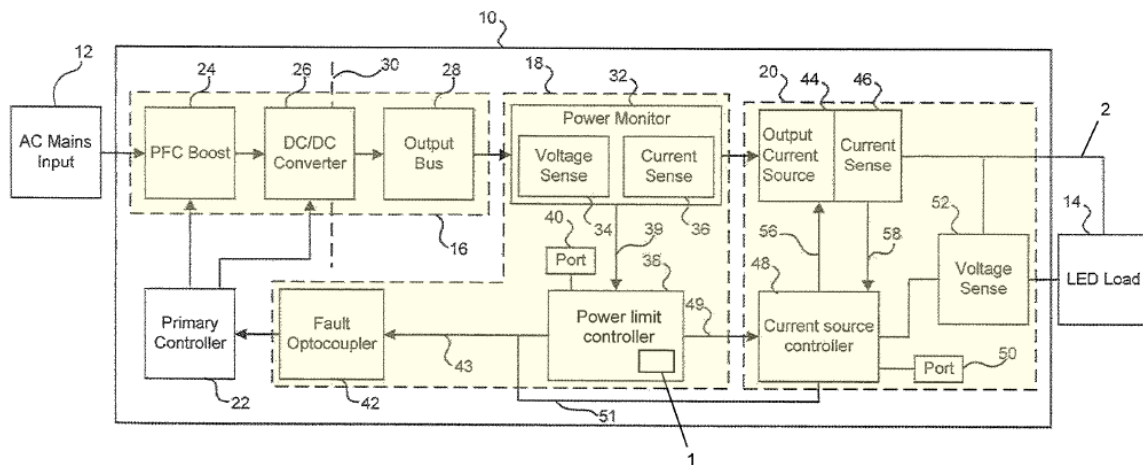
The parties identify the following district court litigation (“the Litigation”) as a related matter: *mate, LLC v. Advanced Lighting Concepts LLC (dba Environmental Lights)*, 3:22-cv-01095-CAB-DEB (S.D. Cal.). Pet. 1; Paper 4, 2 (Patent Owner’s Mandatory Notices). Patent Owner also identifies “recently filed IPR petitions” on the patents involved in the district court litigation: IPR2023-01257; IPR2023-01258; IPR2023-01264; IPR2023-01265; and IPR2023-01266. Paper 4, 2.

B. *Real Party-in-Interest*

Petitioner states their “sole real party-in-interest is Advanced Lighting Concepts LLC.” Pet. 1. Patent Owner states that the “Real Party in Interest for Patent Owner is: mate LLC.” Paper 4, 2.

C. The '713 Patent (Ex. 1001)

The '713 patent is titled “Apparatus and Method for Monitoring and Limiting Power to SSL Devices.” Ex. 1001, code (54). The invention monitors and limits power to a solid-state lighting (SSL) device, such as a light-emitting diode (LED). *Id.* at 1:58–65. As part of this process, “after the determination of a fault operation condition,” the claimed apparatus and method assist “in the recovery process for providing power to the SSL device without having to automatically shut down the system or apparatus of providing power.” *Id.* at 1:66–2:7. Figure 1b,¹ reproduced below, is a schematic diagram of an apparatus for providing power to a SSL device; we have added shading to three boxed “units” 16, 18, 20. *Id.* at 2:44–45.



As shown in annotated Figure 1b, LED power source 10 receives power from external AC mains input 12 and then controls and delivers power to

¹ The '713 patent's description of a Figure 1a “first embodiment” (*id.* at 3:22–7:4) underpins much of our summary for the Figure 1b embodiment. “The embodiment of FIG. 1b is similar to the embodiment of FIG. 1a with the inclusion of a voltage sense 34 located within the power monitor 32” and with “further information relating to the voltage level being provided.” *Id.* at 7:6-12.

external LED load 14, which may be the SSL device. *Id.* at 3:24–28. LED power source 10 includes primary controller 22, power circuit 16, power limit 18, and output current driver 20. *Id.* at 3:28–31, 3:53–55.

Power circuit 16 includes power factor conversion (PFC) boost 24, DC/DC converter 26, and output bus 28. *Id.* at 3:56–57, 4:1–12. Primary controller 22 is connected to PFC boost 24 and DC/DC converter 26. *Id.* at 3:60–61.

Power limit 18 includes power monitor 32 (having voltage sense 34 and current sense 36), power limit (“secondary”) controller 38, and fault optocoupler 42. *Id.* at 4:27–29, 7:13–15. Secondary controller 38 performs a power calculation based on the voltage on output bus 28 and monitored current sense 36 and voltage sense 34 readings. *Id.* at 7:18–21. Secondary controller 38 is connected to power monitor 32 via sense line 39, and to fault optocoupler 42 via control line 43. *Id.* at 4:40–44. If the power level exceeds a threshold, secondary controller 38 asserts one or more power limit options. *Id.* at 4:58–60.

Output current driver 20 includes output current source 44, current sense 46, optional voltage sense 52, and current source controller 48. *Id.* at 4:61–5:5. Output current source 44 provides a regulated output current to LED load 14 implemented by feedback loop 58 to current source controller 48. *Id.* at 5:6–9. More particularly, output current source 44 provides constant current output 2 to LED load 14 while current sense 46 provides a feedback signal to current source controller 48 to regulate the current supplied to LED load 14. *Id.* at 6:11–22.

D. Challenged Claims

Claim 1 is the only independent claim and is reproduced below.

1. [p] Apparatus for controlling power to a solid state lighting (SSL) device load comprising:

[a] a power circuit for receiving power from an external source;

[b] at least one power limit connected to the power circuit;

[c] at least one output current driver for supplying a load power to the SSL device load, the at least one output current driver connected to the at least one power limit; and

[d] a power limit controller;

[e] wherein the power circuit transmits the power to the at least one power limit which, in turn, transmits a current to the at least one output current driver;

[f] wherein the power limit controller directly or indirectly monitors a level of the load power and controls the at least one power limit to reduce the level of the load power for a predetermined period of time when the load power exceeds a predetermined power limit;

[g] wherein if the load power exceeds the predetermined power limit, the power limit controller internally generates and transmits a signal to the current source controller to control the load power to the load;

[h] wherein the signal is based on internal controls.

Ex. 1001, 12:19–41 (bracketed letters added to show Petitioner's designations).

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claims Challenged	35 U.S.C. § ²	Reference(s)
1, 2, 5, 10, 13	102	Zudrell-Koch ³
12, 13	103	Zudrell-Koch, Zhdanau, ⁴ Veskovic ⁵

Petitioner relies on the Declaration of Joseph C. McAlexander in support of its arguments. Ex. 1002.

II. ANALYSIS

A. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. Only terms that are in controversy need to be

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103 effective March 16, 2013. Because the ’713 patent has an effective filing date after the effective date of the applicable AIA amendments, we refer to the AIA version of §§ 102 and 103. *See also* Ex. 1004, 26 (the ’713 Patent’s prosecution history, and, particularly, the Notice of Allowability confirming examination per the AIA’s “first inventor to file” framework). We note, however, that our analysis does not depend on whether the claims should be evaluated under the AIA statute or pre-AIA statute.

³ US 9,173,273 B2, issued Oct. 27, 2015 (Ex. 1005).

⁴ US 2014/0103804 A1, published Apr. 17, 2014 (Ex. 1006).

⁵ US 2013/0063047 A1, published Mar. 14, 2013 (Ex. 1007).

construed, and then only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner does not propose any express claim construction, but argues that each “claim term challenged by this Petition should be construed in accordance with its ordinary and customary meaning.” Pet. 10. We conclude that no claim term requires express construction for purposes of this decision. *See, e.g., Vivid Techs.*, 200 F.3d at 803.

B. Level of Ordinary Skill in the Art

The Petition does not assert a level of ordinary skill. *See generally* Pet.; *but see* Ex. 1002 ¶ 31 (Petitioner’s declarant stating the level of ordinary skill was “at least a bachelor’s degree in electrical engineering, computer science, or a related field and significant experience with power regulation devices, like LED drivers and dimmers”).

We apply Petitioner’s declarant’s definition of a person of ordinary skill in the art (“POSITA”), and also determine that the asserted prior art demonstrates a level of ordinary skill in the art sufficient for deciding institution. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error ‘where the prior art itself reflects an appropriate level and a need for testimony is not shown.’” (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed.Cir.1985))).

C. Principles of Law

To establish anticipation under 35 U.S.C. § 102, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). Each element of the challenged claim must be found, either expressly or inherently, in the single prior art reference. *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). Thus, the dispositive question is whether one skilled in the art would have reasonably understood or inferred from a prior art reference that every claim element is disclosed in that reference. *Eli Lilly & Co. v. L.A. Biomedical Research Inst.*, 849 F.3d 1073, 1074–1075 (Fed. Cir. 2017).

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) if in evidence, objective evidence of

nonobviousness.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A decision on the ground of obviousness must include “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). The obviousness analysis “should be made explicit” and it “can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR*, 550 U.S. at 418.

D. Asserted Anticipation by Zudrell-Koch (Ground 1)

Petitioner argues that Zudrell-Koch anticipates claims 1, 2, 5, 10, and 13. Pet. 10–28.

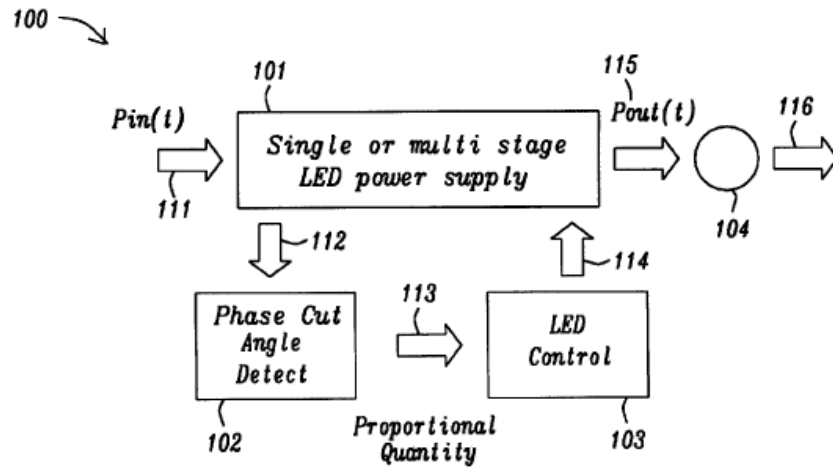
1. Zudrell-Koch (Ex. 1005)

Zudrell-Koch is a U.S. patent titled “Solid State Lightening Driver with Mixed Control of Power Switch.” Ex. 1005, code (54). The invention “relates to illumination systems,” and more particularly, “to a method and system for controlling the degree of dimming of solid state lighting devices such as LED or OLED assemblies.” *Id.* at 1:6–9. Zudrell-Koch’s invention provides “a reliable determination of the phase of a mains power submitted to a phase-cut dimmer, thereby reliably and efficiently controlling the illumination” of an SSL lamp. *Id.* at 1:36–40.

Figure 2a, reproduced below, illustrates “example power supply arrangements for an LED lamp” (*id.* at 7:62–63) and particularly “a block diagram of a power supply arrangement 100 which may be used to control

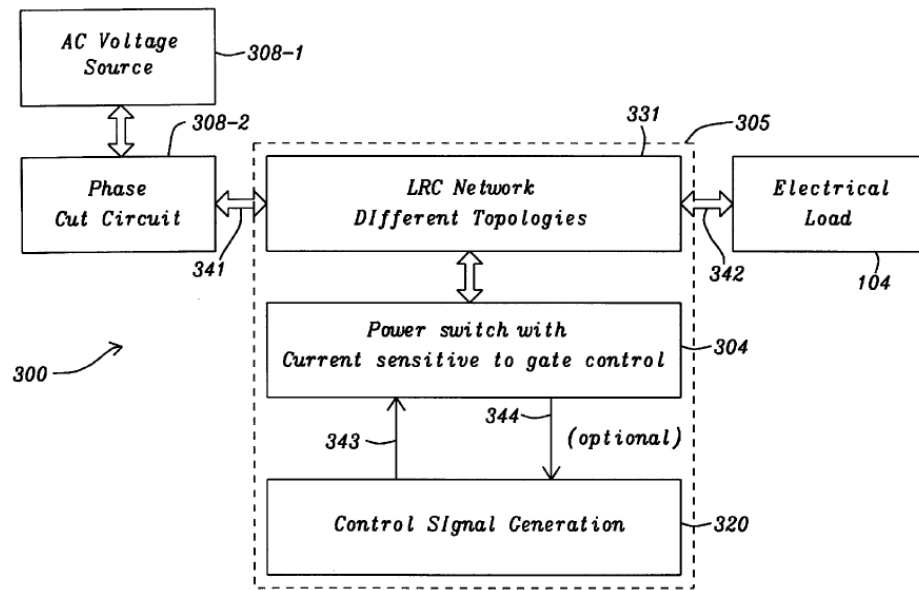
⁶ The record does not contain any arguments relating to objective evidence of nonobviousness.

the power for illuminating the LED 104 based on the power provided by the mains power supply” (*id.* at 9:15–18).



As shown in Figure 2a, power supply arrangement 100 receives input power 111 from the mains supply (not shown) that may have been adjusted by a dimmer (not shown). *Id.* at 9:18–20. Power supply arrangement 100 includes phase-cut angle detection unit 102 which senses input voltage 112 and estimates the angle at which the original sinusoidal mains voltage has been cut by the dimmer. *Id.* at 9:54–58. Estimated angle 113 indicates a desired dim level and is passed to LED control unit 103, which controls LED power supply 101 via control signal 114 to provide output power 115 to LED 104, which drives LED 104 to provide light 116 at the desired dim level. *Id.* at 9:58–63.

Figure 3a, reproduced below, illustrates “a block diagram of an example system for operating SSL lamps using phase-cut dimmers” (*id.* at 7:66–67) and particularly “a block diagram of an example system 300 for controlling the dim state 30 of an SSL device 104” (*id.* at 11:26–27).



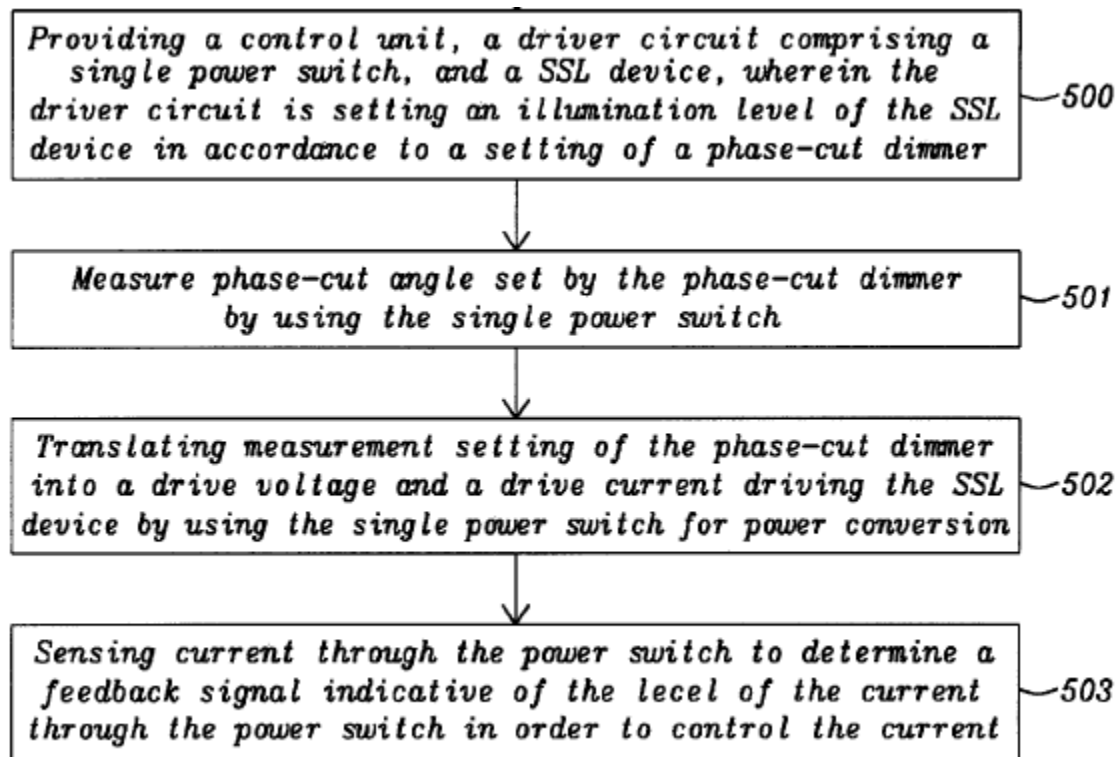
In Figure 3a, AC voltage source 308-1 is modified by dimmer 308-2 to provide phase-cut AC input voltage 341 to LRC network or power converter network 331. *Id.* at 11:28–36. LRC network 331 may be controlled using power switch 304 to convert input voltage 341 into drive voltage 342. *Id.* at 11:37–49, 11:53–57. Drive voltage 342 is typically controlled to be a constant DC voltage corresponding to (or exceeding) the on-voltage of SSL device 104, and drive current is typically a DC current maintained at a predetermined constant level corresponding to a selected illumination level of SSL device 104. *Id.* at 11:41–49. Increasing and decreasing the constant DC current increases and decreases, respectively, the illumination level of SSL device 104. *Id.* at 11:49–52.

Power switch 304 is operated in at least two different modes. *Id.* at 11:57–58. In a first mode (switched mode or on/off mode), power switch 304 may control a voltage conversion ratio of power converter network 331. *Id.* at 11:58–61. In a second mode (linear mode), power switch 304 may determine a phase-cut angle of input voltage 341 and

thereby determine the desired illumination level of SSL device 104. *Id.* at 11:61–64.

Control unit 320 may control the mode of power switch 304 via gate control signal 343 and may receive feedback signal 344 from power switch 304 to determine the phase-cut angle. *Id.* at 11:65–12:2. During the first mode, gate control signal 343 may turn power switch 304 on/off at a relatively high switching rate to operate power converter network 331 in an energy transfer mode. *Id.* at 12:3–8. During the second mode, power switch 304 may provide a discharge current at the input terminals of driver circuit 350, which discharge current acts as a load to dimmer 308-2, allowing for a reliable determination of the phase-cut angle. *Id.* at 12:8–18. Control unit 320 “may comprise an input voltage pin (not shown) for receiving the voltage derived from input voltage 341.” *Id.* at 13:15–17.

Figure 5 shows a “flowchart of a method allowing a reliable determination of the phase of a mains power submitted to a phase-cut dimmer, thereby reliably and efficiently controlling the illumination of a Solid State Lightening (SSL) lamp.” *Id.* at 8:7–11.



First step 500 depicts a provision of a control unit, a driver circuit comprising a single power switch, and an SSL device, wherein the driver circuit sets an illumination level of the SSL device in accordance with a setting of the phase-cut dimmer. *Id.* at 17:50–55. Step 501 shows measuring a phase-cut angle set by the phase-cut dimmer by using the single power switch. *Id.* at 17:55–56. Step 502 illustrates translating measured setting of the phase cut dimmer into a drive voltage and a drive current driving the SSL device by using the single switch for power conversion. *Id.* at 17:57–59. Step 503 depicts sensing current through the power switch to determine a feedback signal indicative of the level of the current through the SSL in order to control the current. *Id.* at 17:60–62.

2. *Petitioner's Arguments and Analysis*

Petitioner argues that Zudrell-Koch discloses every element of claim 1, as discussed in more detail below. Pet. 11–24.

*a) I[p] – Apparatus for controlling power to a solid state lighting (SSL) device load comprising:*⁷

Petitioner argues that Zudrell-Koch's "driver circuit containing a control unit can be used to drive SSL devices and set an illumination level of the SSL device," and one of ordinary skill in the art "would recognize that Zudrell-Koch disclosure of a driver circuit containing a control unit is equivalent to a configurable LED driver/dimmer." Pet. 11–12 (citing Ex. 1005, 17:50–56, 18:25–30, Fig. 5; Ex. 1002 ¶¶ 53–54, 57).

b) I(a): a power circuit for receiving power from an external source;

Petitioner argues that Zudrell-Koch's "driver circuit drives an input voltage to control dimming levels for SSL" and as such, one of ordinary skill in the art "would readily understand that the driver circuit of Zudrell-Koch discloses the power circuit of the '713 patent." Pet. 13 (citing Ex. 1005, Abstract, 5:26–28; Ex. 1002 ¶¶ 54–55).

c) I(b): at least one power limit connected to the power circuit;

Petitioner argues that one of ordinary skill in the art "would readily understand that the input voltage pin as described in Zudrell-Koch is analogous to⁸ the power limit of the '713 Patent," and "would recognize that

⁷ We need not determine, on this record, whether the preamble is limiting.

⁸ Petitioner's use of the term "analogous," here and throughout the Petition, is also problematic for Petitioner's anticipation arguments. "Analogous" does not mean identical, but rather indicates that two items are similar or comparable. Anticipation "requires that the identical invention that is

the input voltage pin is disposed in the control unit, which is further disposed in the driver circuit means that the input voltage pin is connected to the driver circuit.” Pet. 14–15 (citing Ex. 1005, 4:60–5:11; Ex. 1001, 4:13–26; Ex. 1002 ¶¶ 57–59).

We are not persuaded that Petitioner’s “analogous to” argument comports with the standard for anticipation. Under the applicable standard for anticipation, neither Petitioner nor its declarant provides persuasive analysis that would show that one skilled in the art would have reasonably understood or inferred from Zudrell-Koch that its input voltage pin discloses the claimed power limit. *Eli Lilly*, 849 F.3d at 1074–1075.

Mr. McAlexander testifies: “As discussed above, a POSITA would understand that the input voltage pin is the power limiter that receives power from the power circuit.” Ex. 1002 ¶ 58. Mr. McAlexander cites no evidence in paragraph 58. Regarding the “As discussed above” portion of paragraph 58, the only previous paragraph cited by Petitioner in connection with its limitation 1(b) argument is paragraph 57, in which Mr. McAlexander states that “IC power-supply pins denote voltage and current supply terminals in electric, electronics engineering, and in integrated circuit design.” *Id.* ¶ 57. Mr. McAlexander, however, provides no citation in support of this statement and does not provide any clarification if or how IC power-supply pins relate to the input voltage pin discussed in Zudrell-Koch. *Id.* The only support in paragraph 57 is a summary of a short website page titled “Digital Input,” which provides: “Digital input is where a pin will detect the presence of a voltage level that is either ‘high’ or ‘low,’” and which discusses the topic of

claimed was previously known to others.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1267 (Fed. Cir. 1991).

pins measuring voltage level. *Id.* (citing *Digital Input*, MAKECODE, <https://makecode.adafruit.com/learnsystem/pinstutorial/digital-input>). There is no further explanation in paragraph 57 that would aid in linking or mapping the “input voltage pin” of Zudrell-Koch to the claimed “power limit.” Neither Petitioner’s argument nor Mr. McAlexander’s testimony is persuasive to show that Zudrell-Koch’s input voltage pin teaches the “power limit” as claimed. Merely because an input voltage pin may be present in Zudrell-Koch is not enough, on this record, to establish that the input voltage pin would have been reasonably understood as a power limit.

We note also that Petitioner relies on the input voltage pin discussed in the general introductory section of Zudrell-Koch. Pet. 14 (relying on Ex. 1005, 4:60–5:11). This general introductory section in Zudrell-Koch provides that the “control unit may comprise an input voltage pin.” Ex. 1005, 4:65–66. For other limitations of claim 1, however, Petitioner relies on Zudrell-Koch’s Figure 2a embodiment. *See, e.g.*, Pet. 16 (relying on Ex. 1005, 9:58–63, Fig. 2a), 17 (relying on Ex. 1005, 9:53–63). Figure 2a does not show an input voltage pin.

Figure 3a does not show an input voltage pin, but Zudrell-Koch’s specification provides that an input voltage pin may be present in the Figure 3a embodiment. Ex. 1005, 13:15–17 (“The control unit 320 may comprise an input voltage pin (not shown) for receiving the voltage derived from the input voltage 341.”). It is unclear, however, whether the Figure 2a embodiment on which Petitioner relies for its claim 1 anticipation arguments includes or could include an input voltage pin. “Not only must each claim element be shown in a single reference, but the elements must be ‘arranged or combined in the same way as recited in the claims.’” *TF3 Ltd. v. Tre*

Milano, LLC, 894 F.3d 1366, 1374 (Fed. Cir. 2018) (quoting *Net MoneyIN*, 545 F.3d at 1370). It is also unclear why one of ordinary skill in the art would understand that the input voltage pin in Zudrell-Koch's general disclosure or in Figure 3a would interact with the other required limitations relied on by Petitioner in Figure 2a. We understand that "a reference can anticipate a claim even if it 'd[oes] not expressly spell out' all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would 'at once envisage' the claimed arrangement or combination," but Petitioner has provided no evidence or reasoning to persuade us that one of ordinary skill in the art would "at once envisage" the arrangement or combination. *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015) (alteration in original) (quoting *In re Petering*, 301 F.2d 676, 681 (CCPA 1962)).

Accordingly, these shortcomings fail to satisfy Petitioner's burden to demonstrate the disclosure of a "power limit" in Zudrell-Koch.

d) I(c): at least one output current driver for supplying a load power to the SSL device load, the at least one output current driver connected to the at least one power limit; and

Petitioner argues that "Zudrell-Koch discloses '[t]he driver circuit may comprise a current source and the control unit may be configured to control the current source to provide the appropriate drive current for the determined illumination level.'" Pet. 15–16 (citing Ex. 1005, 5:26–28 (general disclosure)). Petitioner also argues that Zudrell-Koch's Figure 2a "disclosure that the driver circuit provides an output power 115 to the LED 104 is equivalent to the output current driver of the claim 1 of the '713 Patent." Pet. 15–17 (citing Ex. 1005, 4:47–50, 4:60–5:11, 5:26–28, 9:58–63, Fig. 2a; Ex. 1002 ¶¶ 57–58). Petitioner further argues that one of ordinary

skill in the art “would recognize that Zudrell-Koch’s disclosure that the driver circuit contains a control unit, which, as discussed above, contains an input Voltage pin is equivalent to the required power limit.” *Id.* at 17 (citing Ex. 1002 ¶ 58).

Above, Petitioner maps the “input voltage pin” to the claimed “power limit” of claim 1(b). Pet. 14–15. Petitioner does not clearly identify here, however, what element of Zudrell-Koch it maps to the claimed “output current driver.” Petitioner’s statement that Figure 2a’s “driver circuit provides an output power 115 to the LED 104” fails to clearly identify an output current driver. If Petitioner is arguing that power supply arrangement or driver circuit 100 of Figure 2a is the “output current driver,” that argument appears irreconcilable with Petitioner’s argument that the claimed “power limit” (i.e. input voltage pin) is “connected to” the output current driver, because Petitioner does not explain if or where the input voltage pin is located within driver circuit 100, or how an input voltage pin located somewhere within power supply arrangement 100 could simultaneously be “connected to” power supply arrangement 100. Petitioner’s summary that “Zudrell-Koch’s disclosure that the driver circuit contains a control unit, which, as discussed above, contains an input Voltage pin is equivalent to the required power limit” indicates that Petitioner views the input voltage pin as contained within the control unit which is contained within the driver circuit, which also does not account for the connectivity required by limitation 1(c). *Id.* at 17. Moreover, the “input voltage pin” is not shown in Figure 2a or described in the discussion of Figure 2a, so it is unclear how it would be connected to any output current driver of Figure 2a. Petitioner’s arguments

about connectivity, moreover, are unexplained in the cited portions of the declarant's testimony. *See, e.g.*, Ex. 1002 ¶¶ 57–58.

e) 1(d): a power limit controller;

Petitioner argues that one of ordinary skill in the art would “understand Zudrell-Koch's disclosure that the control unit, using the input voltage pin, may be configured to determine that the input voltage exceeds a pre-determined input voltage threshold is equivalent to the power limit controller.” Pet. 17–18 (citing Ex. 1005, 4:60–5:11, 9:53–63; Ex. 1002 ¶¶ 57–59).

Petitioner's identification of the claimed “power limit controller” as the “control unit, using the input voltage pin” of Zudrell-Koch, appears to identify both the control unit and the input voltage pin as the “power limit controller.” The concern is that the power limit (limitation 1(b)) and the power limit controller (limitation 1(d)) are separately claimed limitations. Petitioner does not explain sufficiently how the control unit (which “may comprise an input voltage pin,” Ex. 1005, 4:50–5:11) can map to the power limit controller, and how the input voltage pin can map to the power limit, when the power limit controller in claim 1 is a different element than the power limit. In claim 1, the power limit controller controls, rather than contains or comprises, the power limit. *See, e.g.*, limitation 1(f), limitation 1(g).

Additionally, Petitioner's argument presents two large block quotes from Zudrell-Koch without adequately explaining how they support Petitioner's argument. *See* Pet. 17–18 (quoting Ex. 1005, 4:60–5:11, 9:53–63; Ex. 1002 ¶¶ 57–59). Although Petitioner is not limited to any particular structure in presenting its arguments, using block quotes without adequately

explaining their significance to the arguments fails to satisfy Petitioner's burden to demonstrate a reasonable likelihood of prevailing on its challenge. The first block quote comes from the specific disclosure dealing with power supply arrangement 100 (Figure 2a), which does not contain a voltage input pin. The second block quote comes from the general disclosure referencing an input control pin, which is then only detailed in the Figure 3a description. As above, Petitioner has failed to demonstrate that one of ordinary skill in the art would at once envisage the combinability of these disclosures.

Petitioner's relied-upon declarant testimony (Ex. 1002 ¶¶ 57–59) also fails to explain what the block quotes mean. Rather, as to this limitation, the declarant testimony for claim 1 appears to be silent. *See, e.g.*, Ex. 1002 ¶ 57 (discussing pins generally), ¶ 58 (discussing, insofar as the Board is able to discern, limitations 1(b) and 1(e)), ¶ 59 (discussing, insofar as the Board is able to discern, limitation 1(g)).

f) 1(e): wherein the power circuit transmits the power to the at least one power limit which, in turn, transmits a current to the at least one output current driver;

Petitioner argues: “Zudrell-Koch discloses ‘[t]he driver circuit may comprise a current source and the control unit may be configured to control the current source to provide the appropriate drive current for the determined illumination level.’” Pet. 19 (citing Ex. 1005, 5:25–28). Petitioner argues that one of ordinary skill in the art “would understand that the input voltage pin is the power limiter that receives power from the power circuit” and that “the ‘appropriate drive current’ is then transmitted to the output current driver.” Pet. 19–20 (citing Ex. 1005, 4:60–5:11; Ex. 1002 ¶¶ 57–59).

Here, Petitioner appears to rely on its earlier limitation 1(b) arguments for the first portion of limitation 1(e) (“wherein the power circuit transmits

the power to the at least one power limit”). For the reasons discussed above, Petitioner’s argument that the “input voltage pin is the power limiter that receives power from the power circuit” is flawed. Petitioner’s arguments for the remaining portion of limitation 1(e) are also flawed due to lack of clarity and support. Namely, limitation 1(e) additionally requires a “power limit which, in turn, transmits a current to the at least one output current driver.” Petitioner fails to explain how the power limit (i.e., input voltage pin) of Zudrell-Koch transmits a current to at least one output current driver. Petitioner’s argument for this portion of limitation 1(e) in the Petition reads: “A POSITA would also understand that the ‘appropriate drive current’ is then transmitted to the output current driver.” Pet. 19 (citing Ex. 1002 ¶¶ 57–59). The cited support in the declarant testimony reads: “A POSITA would also understand that the ‘appropriate drive current’ is then transmitted to the output current driver.” Ex. 1002 ¶ 58. No additional support is provided by the declarant for this statement. Unsupported declarant testimony is entitled to little weight. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *see also Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15–17 (PTAB Aug. 24, 2022) (precedential) (finding that a declaration that “merely repeats, *verbatim*, the conclusory assertion for which it is offered to support” and provides no additional supporting evidence or technical reasoning “is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight”); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“Lack of factual support for expert opinion going to factual determinations, however, may render the testimony

of little probative value in a validity determination.”) (quoting *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985)); *Carella v. Starlight Archery & Pro Line Co.*, 804 F.2d 135, 138 (Fed. Cir. 1986) (“Although in some circumstances unsupported oral testimony can be sufficient to prove prior knowledge or use, it must be regarded with suspicion and subjected to close scrutiny.”).

Additionally, this sentence in the Petition, duplicated in the declarant testimony, fails to apprise us of what element or mechanism of Zudrell-Koch purportedly transmits the appropriate drive current to the output current driver, and how any such transmission occurs. It is unclear whether the input voltage pin is responsible for transmitting the appropriate drive current to the output current driver (and if so, how) or if other portions of Zudrell-Koch achieve this portion of limitation 1(e). Even if we were to read into Petitioner’s argument, from its quote that a “control unit may be configured to control the current source to provide the appropriate drive current for the determined illumination level” (Pet. 19 (quoting Ex. 1005, 5:25–28)), a changed position that the control unit, not the input voltage pin, transmits the appropriate drive current to the output current driver, this is at odds with the claim language that the power limit (i.e., input voltage pin), rather than the control unit (i.e., power limit controller) must transmit a current to the at least one output current driver.

- g) *1(f): wherein the power limit controller directly or indirectly monitors a level of the load power and controls the at least one power limit to reduce the level of the load power for a*

predetermined period of time when the load power exceeds a predetermined power limit;

For this limitation, Petitioner provides three quotes to portions of Zudrell-Koch (Pet. 20–21 (quoting Ex. 1005, 4:60–64, 5:1–7, 5:12–17)), then argues that “the input voltage pin is the power limit, which, in turn is controlled by a control unit,” and that the “control unit determines whether the voltage exceeds a voltage threshold.” Pet. 21. Petitioner does not cite to any declarant testimony for this limitation. Petitioner concludes: “As such, Zudrell-Koch discloses the power limit controller directly or indirectly monitors a level of the load power and controls the at least one power limit to reduce the level of the load power for a predetermined period of time when the load power exceeds a predetermined power limit.” *Id.* at 21–22.

In so structuring its arguments, Petitioner fails to address the portion of the limitation that provides that the power limit controller “controls the at least one power limit to reduce the level of the load power for a predetermined period of time when the load power exceeds a predetermined power limit.” Petitioner merely concludes that this limitation is met. Pet. 21–22. The Petition lacks explanation of or support for how the power limit reduces the level of the load power for a predetermined period of time. The Petition does not identify a predetermined period of time in Zudrell-Koch; the quotation to a “time interval between the first and second time instants” (Pet. 21 (quoting Ex. 1005, 5:12–17)) is not only unexplained and merely part of a bigger block quote, but also appears to refer to the control unit determining an indicator of a phase-cut angle. The Petition also does not identify reducing “the level of load power for a predetermined period of time when the load power exceeds a predetermined power limit.”

Petitioner's citation to the Abstract (Pet. 21) fails to effectively argue or support that Zudrell-Koch's control unit controls the input voltage pin to achieve any of these elements of limitation 1(f).

h) 1(g): wherein if the load power exceeds the predetermined power limit, the power limit controller internally generates and transmits a signal to the current source controller to control the load power to the load;

Petitioner argues that “Zudrell-Koch discloses ‘[t]he driver circuit may further comprise current sensing means configured to determine a feedback signal indicative of the level of the current through the switch.’” Pet. 22 (citing Ex. 1005, 4:35–37). Petitioner also relies on additional block quotes, without further explanation. *Id.* at 22–23 (quoting Ex. 1005, 4:39–44, 4:40–66). Petitioner next argues: “A POSITA would understand that current sensing means configured to determine a feedback signal which indicates the level of the current.” Pet. 23 (citing Ex. 1002 ¶¶ 57–59).

Petitioner also argues that “the control unit uses a input voltage pin to monitor the voltage level which controls the load power to the load.” Pet. 23 (citing Ex. 1002 ¶¶ 57–59). Previously, Petitioner relied on the input voltage pin to be the power limit, but did not directly assert that the input voltage pin also controls the load power to the load; this appears to be the first time Petitioner argues that that the input voltage pin also controls power to the load. This assertion, if it is indeed what Petitioner is asserting, is unexplained and unsupported. The sentence could also be read as arguing that the control unit controls the load power to the load. In either event, the Petition is unclear as to which element of Zudrell-Koch might carry out this limitation, and the assertion is unexplained and unsupported by the relied-on testimony (Ex. 1002 ¶¶ 57–59), which either discusses different limitations

(¶ 58, discussing limitations 1(b) and 1(e)), or restates the sentences in the Petition without citations to any further evidence (¶ 59).

Here as well, Petitioner fails to address a portion of limitation 1(g), namely, the portion that provides that the power limit controller “internally generates and transmits a signal to the current source controller to control the load power to the load.” Petitioner merely concludes that this limitation is met. Pet. 22–23. The Petition lacks explanation of or support for how the power limit controller, whatever it might be, internally generates and transmits a signal to the current source controller. The Petition does not identify a “current sense controller” in Zudrell-Koch. The quotation to a “control unit may comprise a pin for receiving the feedback signal” (Pet. 22 (quoting Ex. 1005, 4:39–44)) is not only unexplained, but also appears to refer to the control unit receiving, rather than generating and transmitting, a signal. In all, the Petition does not identify in Zudrell-Koch a signal that, when generated by the power limit controller and transmitted to the current source controller, controls the load power to the load.

i) 1(h) wherein the signal is based on internal controls.

Petitioner argues that Zudrell-Koch “discloses ‘[t]he feedback signal may correspond to the voltage drop across the sensing resistor, wherein the voltage drop across the sensing resistor is typically proportional to the current through the switch.’” Pet. 23 (quoting Ex. 1005, 4:39–43), 24 (quoting Ex. 1005, 4:35–59). Petitioner further argues that a “POSITA would recognize that the feedback signal is based on information received from the control unit is analogous to the signal based on internal controls.” *Id.* at 24 (citing Ex. 1002 ¶¶ 57–59).

We are not persuaded that Petitioner’s “analogous to” argument comports with the standard for anticipation. Moreover, for the same reasons identified for limitation 1(g) above, we are not persuaded that Petitioner has demonstrated that Zudrell-Koch discloses a signal as in claim 1. We further cannot discern from the Petition what Petitioner maps to the “internal controls” portion of this limitation 1(h).

3. *Conclusion*

We have considered the arguments and evidence presented by Petitioner, and are not persuaded that Petitioner has demonstrated a reasonable likelihood that independent claim 1 is anticipated by Zudrell-Koch. We also have considered Petitioner’s arguments and evidence as to dependent claims 2, 5, 10, and 13, all of which depend directly from claim 1, and are not persuaded that Petitioner’s arguments for those claims overcome the deficiencies in Petitioner’s arguments for claim 1. For the foregoing reasons, Petitioner has not established a reasonable likelihood of prevailing in showing anticipation of claims 1, 2, 5, 10, and 13 by Zudrell-Koch.

E. Asserted Obviousness based on Zudrell-Koch and Zhdanau or Veskovik (Ground 2)

Petitioner argues that claims 12 and 13 would have been obvious in view of Zudrell-Koch and Zhdanau or Veskovik. Pet. 29–33.

For claims 12 and 13, Petitioner relies on many of the same arguments and evidence for its obviousness grounds as it presents for its anticipation ground. *See, e.g.*, Pet. 29, 31. In its claim 12 section, referring back to its anticipation argument, Petitioner asserts: “Zudrell-Koch anticipates independent claim 1 for the reasons discussed above and incorporated here.

Supra Section X.A.1.” Pet. 29; *see also id.* at 31 (discussing claim 13: “Zudrell-Koch anticipates claim 1 for the reasons discussed above and incorporated herein. *Supra* Section X.A.1.”).

Petitioner’s obviousness grounds do not cure the deficiency in Petitioner’s argument and evidence about whether Zudrell-Koch discloses every element of claim 1. Here, in its obviousness grounds, Petitioner relies on the same reasoning as it presents for anticipation and has not provided any argument or evidence as to why Zudrell-Koch might disclose or suggest the limitations of claim 1 under an obviousness standard. Nor do Petitioner’s arguments present any reasoning as to why Zhdanau or Veskovic might disclose or suggest the limitations of claim 1 under an obviousness standard. On this record, Petitioner’s obviousness arguments fail to meet Petitioner’s burden of demonstrating that the prior art discloses or suggests every element of the challenged claims. For the foregoing reasons, Petitioner has not established a reasonable likelihood of prevailing in showing obviousness of claims 12 and 13 by Zudrell-Koch, Zhdanau, and Veskovic.

III. CONCLUSION

We have considered the Petition and the evidence relied upon by Petitioner and, for the foregoing reasons, determine that Petitioner has not established a reasonable likelihood of prevailing in challenging claims 1, 2, 5, 10, 12, and 13 of the ’713 patent.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* and no *inter partes* review is instituted.

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Patent 9,591,713 B2

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