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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

XU PEICHENG (HONG KONG) OPTOELECTRIC
TECHNOLOGY CO., LIMITED,
Petitioner,
v.

SEMISILICON TECHNOLOGY CORP.,
Patent Owner.

Case IPR2024-00156
Patent No. 8,884,546

PATENT OWNER'S RESPONSE

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I. INTRODUCTION

All challenged claims should be found patentable, at least because the Petition has failed to establish that any claim is obvious over the prior art. At institution, the Board instituted *inter partes* review based only on Ground 1:

Petition Ground / Prior Art	Claim(s)	Board's Institution Decision Finding
Ground 1: <i>Kuang</i> + Knowledge of a POSITA	<u>1</u> , 2	Institution granted, briefing requested on the meaning of “synchronous signals”
Ground 2: <i>Kuang</i> + <i>Debevec</i>	3	Not addressed
Ground 3: <i>Lys</i> + Knowledge of a POSITA	<u>1</u> , 2, <u>8</u>	Not addressed
Ground 4: <i>Lys</i> + <i>Debevec</i>	3	Not addressed
Ground 5: <i>Hiroyuki</i> + Knowledge of a POSITA	<u>4</u>	Petition is deficient
Ground 6: <i>Hiroyuki</i> + <i>Kuang</i>	5, 6, <u>8</u>	Petition is deficient as to claim 8 Claims 5 and 6 not addressed

Each of the six grounds fails to set forth a complete obvious analysis, and each ground fails to establish that every claim element is taught by the cited references. Grounds 1 and 3 fail to show disclosure of a “curtain lamp” even under Petitioner’s own definition. Under Ground 1, the Board recognized that claim 1 requires two separate signals—control signals *and* synchronous signals, acknowledging potential distinctions between the two and requesting briefing on the meaning of “synchronous signals.” ID 23, 45. Synchronous signals are “signals related to

activities governed by synchronized timing,” which further demonstrates why Grounds 1 and 3 should be rejected. Grounds 2 and 4 do not establish that it would have been obvious to a person of ordinary skill in the art (“POSITA”) to add a transistor from *Debevec* to the significantly different devices of *Kuang* or *Lys*. Ground 3 fails to establish that *Lys* discloses at least the claimed “master control unit” of claim 1 or the “second curtain lamp” of claim 8. Under Ground 5, the Board has already agreed with Patent Owner that the cited art fails to disclose the “pins” of claim 4. Under Ground 6, the Board found the Petition deficient with respect to the “signal processor” of claim 8, and Ground 6 because it would not have been obvious to a POSITA to add a microcontroller from *Kuang* to *Hiroyuki*.

Additionally, the expert testimony accompanying the Petition should carry no weight, because it constitutes unsupported and conclusory statements mirroring the Petition, having no factual support, reasoning, or expert analysis. Under 37 C.F.R. § 42.65(a), “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” According to the Director, the Board should give little weight to the Petitioner’s expert where “the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner’s conclusory arguments.” *Xerox Corp. v. Bytemark, Inc.*, No. IPR2022-00624, Paper 12, 5 (PTAB Feb. 10, 2023). The Federal Circuit has also held that “adopting an argument that the petitioner has not

sufficiently made” constitutes error under the Administrative Procedure Act. *Apple Inc. v. Corephotonics, Ltd.*, 81 F.4th 1353, 1360 (Fed. Cir. 2023).

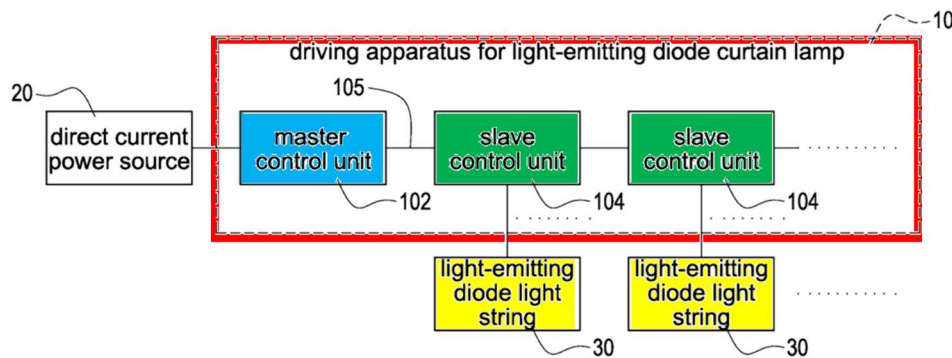
None of Petitioner’s grounds can prevail due to differences between the prior art and the claims, and fatal flaws in all six grounds asserting obviousness. Petitioner cannot now cure its deficient grounds with new evidence, testimony, or theories that could have been raised in the Petition. *See Dynaenergetics Eur. Gmbh & Dynaenergetics US, Inc. v. Swm Int’l, LLC*, No. IPR2022-01372, 2024 WL 422604, at *14 (PTAB Feb. 5, 2024). Challenged claims 1-6 and 8 should be upheld as patentable.

II. OVERVIEW OF THE ’546 PATENT

A. Technical Overview

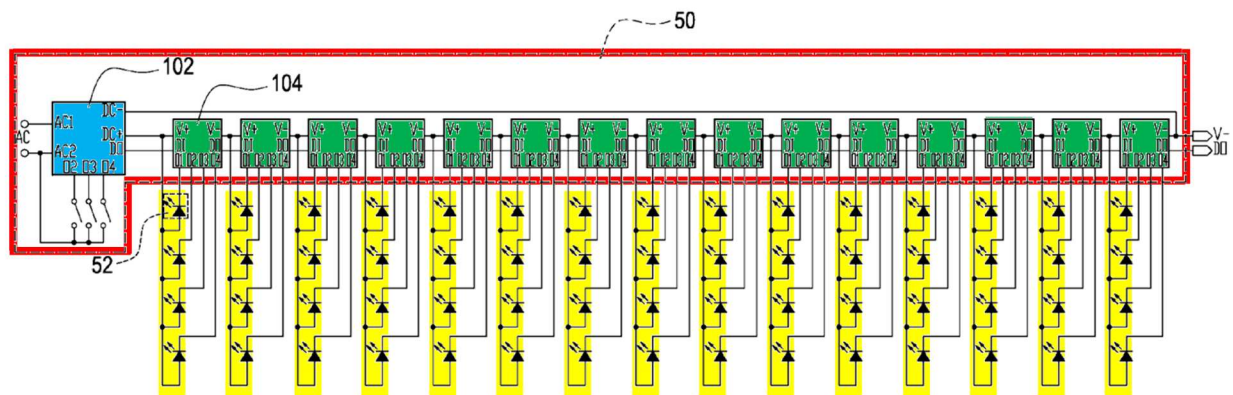
The ’546 patent is titled “Driving Apparatus for Light-Emitting Diode Curtain Lamp.” Ex. 1001, cover. It issued on November 11, 2014, from an application claiming priority to Taiwanese application TW099220340U, filed October 21, 2010. *Id.*; Lebby, ¶ 44.

The ’546 patent discloses multiple embodiments of a driving apparatus for a light-emitting diode (LED) curtain lamp. Ex. 1001, Title, Abstract, 1:25-2:16. Figure 1 shows a block diagram of one embodiment:



'546 Patent (Ex. 1001), Fig. 1 (annotated)

As shown, the **driving apparatus 10** (circled in **red**) includes a **master control unit 102** (highlighted in **blue**), multiple **slave control units 104** (highlighted in **green**), and **light-emitting diode light strings 30** (highlighted in **yellow**) each connected to a corresponding slave control unit. Fig. 7 below is a circuit diagram of an example of an LED curtain lamp, with a more detailed illustration of the **LED light strings** (in **yellow**) each connected to a corresponding **slave control unit** (in **green**):

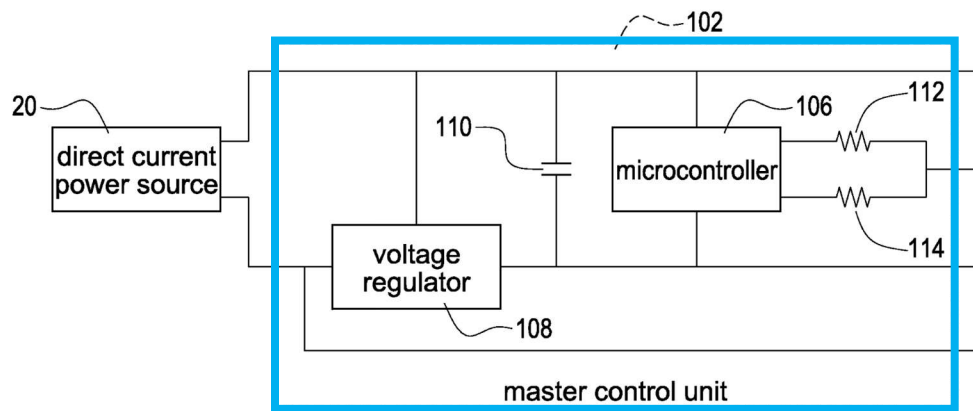


'546 Patent (Ex. 1001), Fig. 7 (annotated)

Per claim language, the '546 patent is directed to a lamp having **LED light strings** (in **yellow**, above) arranged to form a curtain of lights extending from one or more

slave control units (in **green**). Independent claims 1, 4, and 8 each recite “at least a light-emitting diode string” or “light-emitting diode string.” Ex. 1001, 7:7-8:44. Lebbby, ¶ 45.

Claim 1 recites, among other things, a direct current power source, and a master control unit that includes a microcontroller and a voltage regulator (Ex. 1001, 7:11-15), which Fig. 2 illustrates:



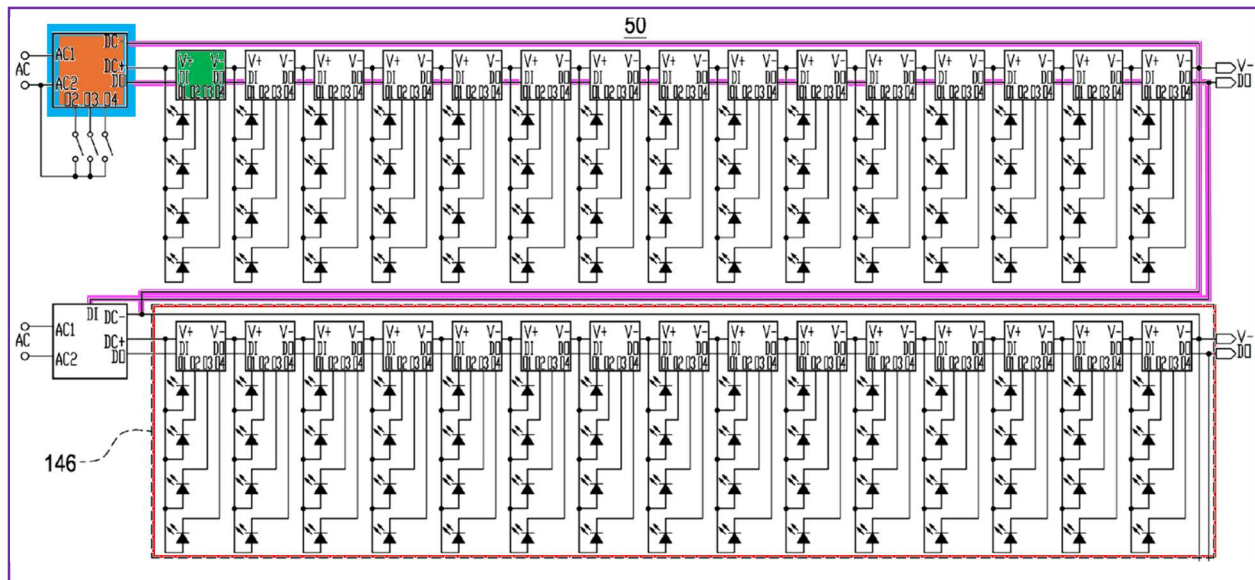
'546 Patent (Ex. 1001), Fig. 2 (annotated, showing exemplary components of the master control unit 102)

Specifically, independent claim 1 recites a transmission line, between the master control unit and the slave control unit, that transits 1) control signals, and 2) synchronous signals. Ex. 1001, 7:19-20, 23-24; Lebbby, ¶ 46.

Independent claim 4 recites an alternating current power source, requires the master control unit to have a power negative terminal pin and a signal output pin,

and requires the slave control unit to have a signal input pin and a signal output pin. Ex. 1001 at 7:35-8:7; Lebby, ¶ 47.

Independent claim 8 recites, among other elements, a slave control unit having a signal processor, as well as “an alternating current voltage transferring to direct current voltage circuit electrically connected to the slave control unit [of a curtain lamp driving apparatus]” *and* electrically connected to a second curtain lamp. *Id.*, 8:39-44. These elements of claim 8 are illustrated in Fig. 8:



'546 Patent (Ex. 1001), portion of Fig. 8 (annotated)

As shown above, a “**light-emitting diode string 50**” (circled in **purple** because “**50**” refers to the entire figure) includes a **master control unit** (circled in **blue**) having an “**alternating current voltage transferring to direct current voltage circuit**” (“AC/DC converter,” in **orange**) that is electrically connected to a **slave control unit** (in **green**). As illustrated by the **connection lines** (in **pink**), the **AC/DC**

converter is also electrically connected to a **second curtain lamp 146** (circled in **red**). Lebbby, ¶ 48.

B. Prosecution History

The application that led to the '546 patent was filed on September 14, 2011. Ex. 1002, 31-32. Examination began on March 26, 2014, when the Patent Office issued a non-final Office Action. *Id.* at 68-78. In the Office Action, the examiner rejected independent claim 1 as obvious over U.S. Pat. Pub. No. 2012/0050606 to *Debevec*. *Id.* at 70; Ex. 1005. In the same Office Action, the examiner indicated that claims 2-10 were allowable over the prior art including *Debevec*. Ex. 1002 at 71 (“Allowable Subject Matter”). Therefore, the Patent Office already considered the *Debevec* reference and allowed the claims over *Debevec*, including dependent claim 3 challenged in Grounds 2 and 4. Following an amendment to independent claim 1 and an examiner’s amendment to independent claim 9 (now issued as '546 patent claim 8), the Patent Office allowed the application and issued the '546 patent on November 11, 2014. *Id.* at 80, 91-95, 111. Lebbby, ¶ 49.

III. LEVEL OF ORDINARY SKILL IN THE ART

For the purposes of this proceeding, Patent Owner applies the level of ordinary skill in the art set forth in the Petition. *See* Pet. 5. Patent Owner does not necessarily

concede that Petitioner’s proposed level of ordinary skill in the art is correct. Lebbby, ¶¶ 50-53

IV. CLAIM CONSTRUCTION

The Board construes claims per *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)(*en banc*). Claims must be construed only to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

In the Institution Decision, the Board requested additional briefing on the meaning of “synchronous signals” and the distinction from “control signals.” Institution Decision at 19, 23, 45. Patent Owner maintains the Petition improperly cited *the same* commands in the cited references as meeting *both* the “control signals” and the “synchronous signals” – *two separate* elements of claim 1. See Prelim. Resp. 25-26; Pet. 16-17. Additionally, the Petition fails to establish that the cited references disclose “synchronous signals” under either of the definitions set forth by Petitioner or the Board. Lebbby, ¶ 54. To the extent the construction of “synchronous signals” is needed, Patent Owner submits that “synchronous signals” means “signals related to activities governed by synchronized timing” and provides additional reasons why Grounds 1 and 3 challenging claim 1 fail.

A. Synchronous Signals

Claim 1 element 1[D] recites, in part, “the transmission line is used to transit control signals and synchronous signals.” Ex. 1001, 7:21–24. Petitioner asserts, without any support besides Dr. Schubert’s Petition-mirroring and uncorroborated testimony, that “a POSITA would have understood the term ‘synchronous signals’ to mean signals that are sent to the slave nodes to control their corresponding LED strings at the same time.” Pet. 16–17. Petitioner’s definition essentially equates the separately claimed “synchronous signal” to the claimed “control signal,” as is evident from Petitioner’s assertion that on/off commands in the prior art also constitute the “synchronous signals” of claim 1. Lebbby, ¶ 55. However, a POSITA would have understood that *synchronous* signals involve more than a command sent to turn off multiple devices. Lebbby, ¶ 55.

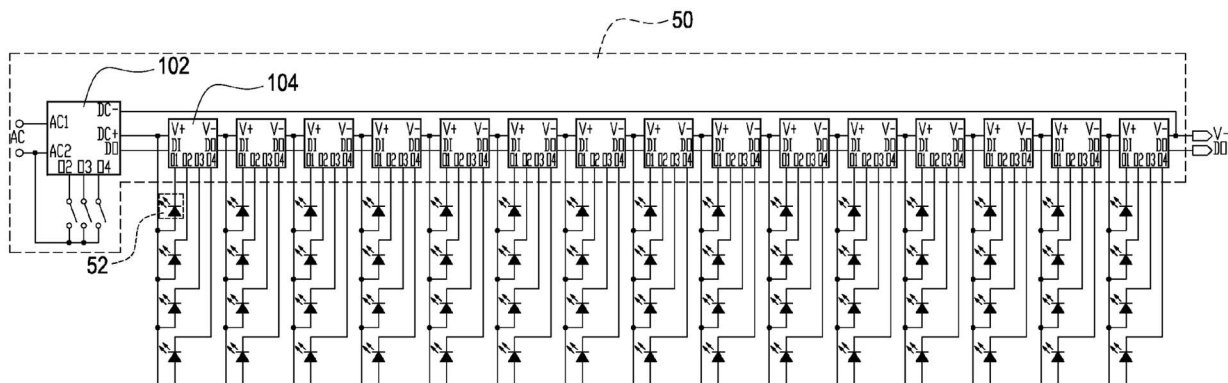
At institution, the Board made a preliminary finding that the ordinary meaning of “synchronous signals” in 1[D] is transmitting “signals related to an activity(ies) occurring at the same time.” ID at 44. The Board based its construction on a definition of “synchronous” in the Microsoft Computer Dictionary (Ex. 3001), which states:

synchronous:

adj. Occurring at the same time. In computer transmissions, a reference to activity governed by a clock or by synchronized timing.

ID 44 (citing Ex. 3001, 506). Patent Owner submits that a proper construction of “synchronous signals” should reflect the entirety of the Microsoft Computer Dictionary definition, because the term “synchronous signals” in the context of 1[D] involves computer transmissions. Lebbby, ¶ 56.

Applying the full definition of “synchronous” to the Board’s construction, Patent Owner submits that the proper construction of “synchronous signals” is “signals related to activities governed by synchronized timing.” This construction is consistent with what the Board already relied upon, Ex. 3001. This construction is also consistent with how a POSITA would have understood “synchronous” signals. *See* Ex. 2004. This construction also comports with the context of the ’546 patent, which involves controlling strings of LED lights in a curtain lamp using master and slave control units. As shown in Fig. 7 of the ’546 patent, each serial string of LEDs 52 receives power via a common power line, and each LED 52 can be individually controlled via connections to a slave control unit 104:



'546 Patent, Fig. 7

A POSITA would have understood that because the '546 patent discloses the use of synchronous signals, the '546 patent curtain lamp is designed for controlling LED lights individually and in a timing coordinated manner, which allows for patterns of lights and colors, as well moving / animated lights, and other decorative types of illumination. Lebbby, ¶ 57.

A POSITA would have understood that using synchronized timing would have been necessary for the master and slave control units to effectively control the curtain lamp LEDs individually in the ways described above. Therefore, a POSITA would have understood the claimed “synchronous signals” are distinct from the “control signals” of claim 1, and involve activities governed by synchronized timing, as set forth in the Microsoft Computer Dictionary definition of “synchronous” as “a reference to activity governed by synchronized timing.” Lebbby, ¶ 58. The “synchronous signals” of claim 1 must also be recognized as being separate from “control signals,” because “[w]here a claim lists elements separately, ‘the clear implication of the claim language’ is that those elements are ‘distinct component[s]’ of the patented invention.” *Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (citing *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)).

V. GROUNDS 1 AND 3 FAIL, BECAUSE KUANG AND LYS DO NOT DISCLOSE THE CLAIMED “CURTAIN LAMP” OF CLAIMS 1 AND 8

Petitioner fails to establish that *Kuang* or *Lys* disclose a “curtain lamp” as recited in the preamble of independent claims 1 and 8. “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). And the Petition does not dispute that the preambles of claims 1 and 8 are limiting.

Petitioner alleges that a “light-emitting diode curtain lamp” is “commonly understood to be one or more light strings,” Pet. 8, 25, 38. Petitioner cited support that has nothing to do with the term “curtain lamp”: On pages 8, 25, and 38, Petitioner quotes a sentence of the ’546 patent that explains to a POSITA that all types of LED chips may be used including, for example, “surface mount LEDs, chip-on-board LEDs, and LEDs of all other configurations.” Ex. 1001, 2:34-40. But this does not define “curtain lamp” and merely suggests that the LED chips of the ’546 patent embodiments are not limited to any particular form factor. Lebbby, ¶¶ 59-61.

In addition to Petitioner’s failure to identify evidence supporting the purported “common understanding” of the claim term and does not explain how “one or more light strings” would have been understood by a POSITA to be a “curtain lamp,” the Petition fails to establish obviousness of 1[Pre] or 8[Pre]. Lebbby, ¶ 62.

In particular, the Petition fails to establish that *Kuang* or *Lys* disclose or render obvious a “driving apparatus for a *light emitting diode curtain lamp*,” as required by 1[Pre] and 8[Pre]. For the purposes of this proceeding and to reduce the number of issues, Patent Owner does not dispute that *Hiroyuki* discloses a device that may be configured as a “curtain lamp.” Lebbby, ¶ 62

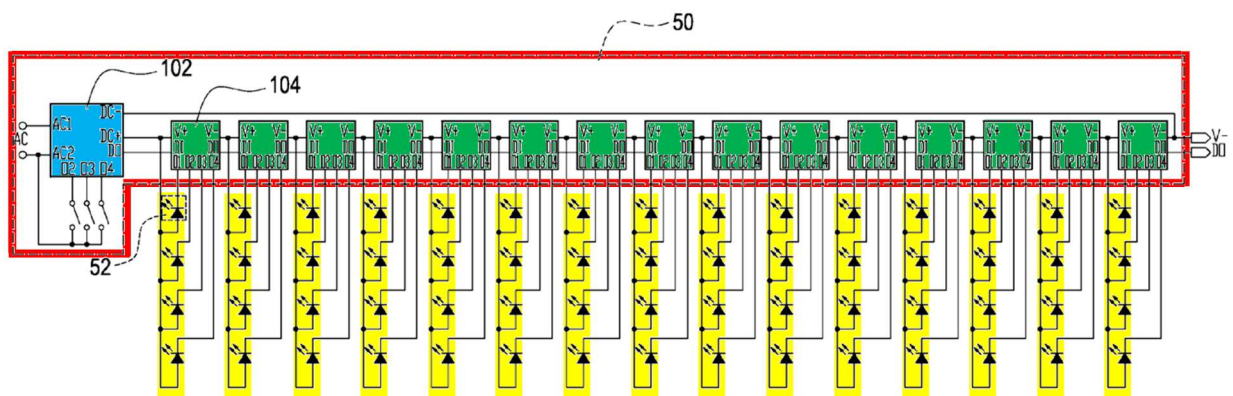
A. The Preambles of Claims 1 and 8 are Limiting

A preamble “limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (internal citations omitted). “[D]ependence on a particular [] preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention.” *Id.* “[U]se of preamble terms to define positive limitations in the body of claims can evince an inventor’s intent that the preamble limits the scope of the claim.” *See Shoes by Firebug LLC v. Stride Rite Children’s Grp., LLC*, 962 F.3d 1362, 1368 (Fed. Cir 2020) (finding that relying on a limitation in the preamble for antecedent basis support confers patentable weight to the preamble).

When the body of the claim expressly refers to several features recited in the preamble and uses those referenced features to define the claimed invention, as is the case here, it would be legal error not to give the preamble patentable weight. In

independent claims 1 and 8, multiple terms in the body of the claim (e.g., the light-emitting diode string, and the direct current power source) rely on the preamble for antecedent basis support. *See* Ex. 1001 at 7:7-24, 8:25-44. Dependent claims 2 and 3 also recite “driving apparatus” and “curtain lamp”, finding antecedent basis support for these terms in the preamble of claim 1. *Id.* at 7:25-30; Lebbby, ¶¶63-64.

The '546 patent also describes the preamble as reciting structure that is essential to give life and meaning to the body of claim. Specifically, the '546 patent describes drawbacks particular to curtain lamps having strings of light-emitting diodes (LEDs), such as conventional driving apparatuses that cannot light curtain lamps vividly, and addresses these drawbacks with driving apparatus embodiments designed to effectively power and control a curtain lamp with strings of LEDs. Ex. 1001 at 1:6-2:16. The '546 patent figures illustrate examples of curtain lamps, as discussed and shown above in Section II. *See Id.*, Figs. 1, 4, 8, 7 (below):



'546 Patent (Ex. 1001) Fig. 7 (annotated showing an example of a curtain lamp)

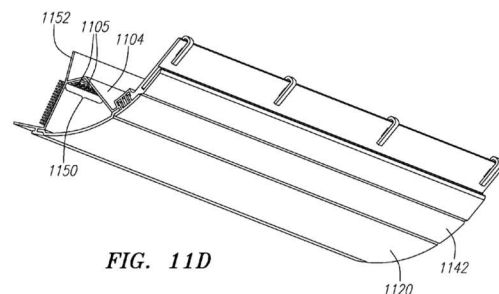
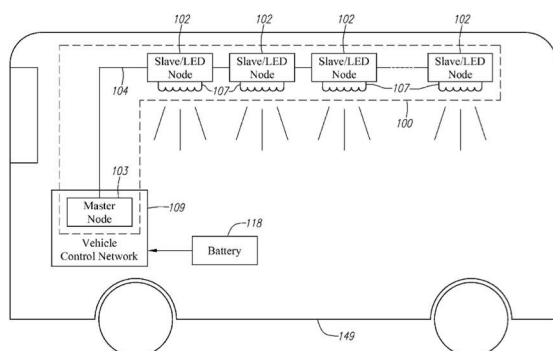
That is, a phrase in the preamble of each independent claim (“driving apparatus for light-emitting diode curtain lamp”) describes structure essential to give meaning to limitations in the body of the claim. Lebbly, ¶ 65.

Thus, in this case, the “inventor’s intent that the preamble limit the scope of the claim” is clear based on the plain language of claims and the description in the ’546 patent. *See Shoes by Firebug LLC*, 962 F. 3d 1362, 1368. Therefore, the preamble independent claims 1 and 8 of the ’546 patent must be given patentable weight and be considered a claim limitation. Lebbly, ¶ 66.

B. The Petition Fails to Establish *Kuang*’s Disclosure of the “Curtain Lamp” of 1[Pre] (Ground 1)

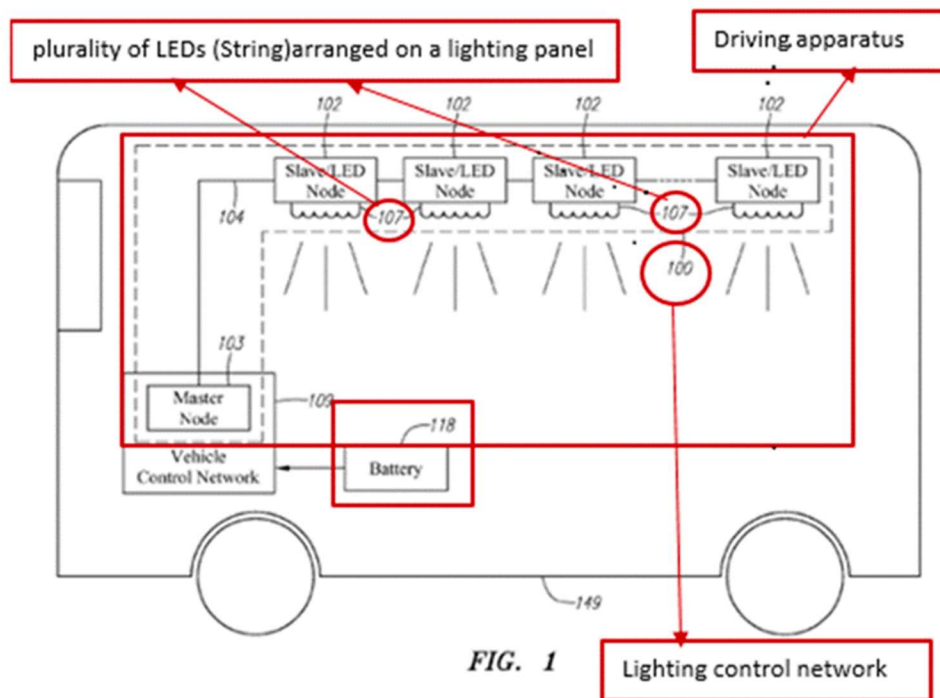
The Petition does not explain how *Kuang*, cited in Ground 1 for independent claim 1, discloses a curtain lamp, at least because there is no showing of how *Kuang* discloses “one or more light strings” under Petitioner’s own definition of “curtain lamp.” *See* Pet. 8, 25, 38; Lebbly, ¶ 67.

Kuang discloses ceiling light panels designed for use in a vehicle, such as a bus, as illustrated the diagram in *Kuang* Fig. 1:



Kuang (Ex. 1004), Figs. 1 (left) and 11D (right), showing examples of ceiling panels for a vehicle interior

See Ex. 1004 at Figs. 1, 11C, 11D, Abstract (“the lighting fixture may include a ceiling panel fixture”), [0012]. *Kuang*’s ceiling panels are rigid lighting units, having LEDs arranged on a metal printed circuit board. *Id.*, [0061], [0067], [0068]. The only portions of *Kuang* cited in the Petition for the “curtain lamp” of 1[Pre] are Figs. 1 and 4, [0032], [0045], [0122]. Pet. 6-9. Nowhere in these disclosures does *Kuang* mention a “light string,” illustrate light strings, or suggest “light strings” in any form. Lebbly, ¶ 68. Petitioner annotates *Kuang* Fig. 1 to assert that LEDs 107 constitute a “string” that meets the “curtain lamp of 1[Pre]:



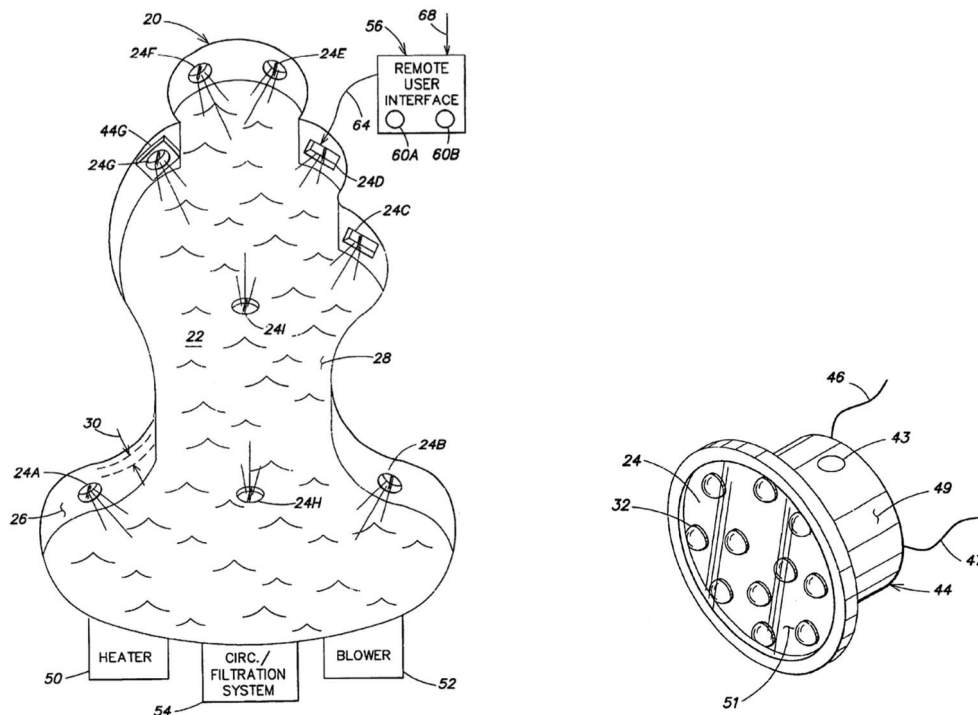
Annotated version of Kuang Fig. 1 from Petition page 7

Kuang does not support Petitioner’s annotation of a “string” above, because *Kuang* states that item 107 refers to “a plurality of LEDs 107 *arranged on a lighting panel* or other fixture to provide illumination for a particular interior region of [a] transit vehicle 149.” Ex. 1004, [0032] (emphasis added). Lebbby, ¶ 69.

For these reasons, the Petition fails to establish that *Kuang*’s ceiling panels meet Petitioner’s own definition, at least because the Petition fails to establish that *Kuang* discloses “light strings” in any form. Therefore, the Petition fails to establish that *Kuang* discloses the “curtain lamp” of 1[Pre]. Lebbby, ¶ 70.

C. *Lys* Does Not Disclose the Claimed “Curtain Lamp” of 1[Pre] or 8[Pre] (Ground 3)

The *Lys* reference, cited in Ground 3 for independent claims 1 and 8, discloses light sources for “illumination of liquids.” Ex. 1008 at Abstract. The light sources of *Lys* are not a “curtain lamp” as recited in 1[Pre] and 8[Pre], at least because they are not “one or more light strings” under Petitioner’s definition. *See* Pet. 25. In Figures 3 and 4 of *Lys*, relied upon by Petitioner, *Lys* discloses “a light source for illumination in a pool or spa” and “a networked lighting system for illumination in a pool or spa environment,” respectively. *Id.*, 3:64-4:2. Figure 3 illustrates a round waterproof lighting fixture:



Lys (Ex. 1008), Figs. 1 (left) and 3 (right)

As shown in Fig. 1 of *Lys* (above left), the lights are supported by a pool wall 26 or floor 28. See Ex. 1008, 9:7-11; Lebby, ¶ 71.

The Petition makes no attempt to explain how the pool lighting fixtures of *Lys* constitute the claimed “curtain lamp,” let alone Petitioner’s definition of “one or more light strings.” See Pet. 25, 38; Lebby, ¶ 72. Instead, the Petition repeats the conclusory statement that “[a] POSITA would have understood the broad disclosure of *Lys* to disclose a ‘light-emitting diode curtain lamp,’ which is commonly understood to be one or more light strings,” without any explanation of how *Lys*’s round pool lights are “one or more light strings.” Pet. 25, 38. As shown above, *Lys* does not illustrate or describe any form of a “light string,” and therefore *Lys* is

deficient with respect to 1[Pre] under Petitioner’s own definition of “curtain lamp.” Lebbby, ¶ 72. The Petition cites its expert Dr. Schubert’s Declaration for support, but the declaration merely repeats the same conclusory statements as the Petition with respect to 1[Pre]. *See* Ex. 1003, ¶¶ 61, 79. Without any factual support or analysis, Dr. Schubert’s Declaration is entitled to little, if any weight. *See* 37 C.F.R. § 42.65(a). Therefore, the Petition fails to establish that *Lys* discloses the “curtain lamp” of 1[Pre]. Lebbby, ¶ 72.

VI. GROUNDS 1 AND 3 FAIL, BECAUSE *KUANG* AND *LYS* DO NOT DISCLOSE THE CLAIMED “SYNCHRONOUS SIGNALS” OF CLAIM 1

1[D] recites “the transmission line is used to transit *control signals and synchronous signals*.” Ex. 1001, 7:23-24 (emphasis added). That is, the transmission line transits two types of signals: 1) control signals, and 2) synchronous signals. At institution, the Board made a preliminary finding that the ordinary meaning of “synchronous signals” is transmitting “signals related to an activity(ies) occurring at the same time.” ID 44. To the extent the Board deems construction necessary, then “synchronous signals” should be construed as “signals related to activities governed by synchronized timing.” Lebbby, ¶ 73.

Kuang and *Lys* do not meet 1[D] under any of the definitions of “synchronous signals” advanced in this proceeding which are summarized as follows:

Claim Term	Petitioner's Definition (Pet. 16-17)	Board's Initial Construction (ID 44)	Patent Owner's Construction (Section IV.A)
Synchronous signals	Signals that are sent to the slave nodes to control their corresponding LED strings at the same time	Signals related to an activity(ies) occurring at the same time	Signals related to activities governed by synchronized timing

Lebby, ¶ 74.

A. *Kuang* Does Not Disclose the Claimed “Synchronous Signals” in 1[D] (Ground 1)

In addressing 1[D], the Petition cites *Kuang*'s disclosure of “[a] master light shutoff command [that] may also be sent from the master node 203 instructing all LED/slave nodes to turn off.” Pet. 17, quoting Ex. 1004 at [0054] (emphasis omitted). At institution, the Board found that “[t]urning off ‘all’ LED/slave nodes with a single command, i.e., a master light shutoff command, appears to suggest that all of the LED/slave nodes are turned off at the same time.” ID 45. The Petition and the Board's initial finding are contradicted by the disclosure of *Kuang*. Lebby, ¶ 75.

Kuang's command sent for “instructing all LED/slave nodes” does not mean that the LED/slave nodes turn off *at the same time* in *Kuang's* system. Lebbby, ¶ 76. *Kuang* does not disclose sending a command to all LED/slave nodes at the same time, simultaneously, or in any other synchronized fashion. To the contrary, *Kuang* discloses sending a command that is *propagated from one slave node to the next*, until the command reaches the last slave node. In particular, *Kuang* discloses

Commands or inquiries may be transmitted from the master node 203 over the command/data bus 212 to the first slave node 223 (Slave Node 1), **which then propagates** the commands or inquiries over the command/data bus 212 to the next slave node 223 (Slave Node 2) in the chain, **and so on in sequence** until the command or inquiry reaches the last slave node 223 (Slave Node N) if necessary. Commands or inquiries need not be propagated if the targeted slave node 223 receives the command or inquiry and responds thereto; however, it may nonetheless be desirable in some configurations to **propagate all commands and inquiries**, or certain subsets thereof, to all of the slave nodes 223 in the lighting control network 200.

Ex. 1004, [0034] (emphases added). In this passage, *Kuang* makes clear that commands are not sent to all slave nodes at the same time. *Kuang* also does not disclose the slave nodes operating according to synchronized timing. Instead, a command is propagated from one slave node to the next. Without any disclosure of

synchronization, a POSITA would expect that each slave node executes the command as it is received, such as the following diagram:

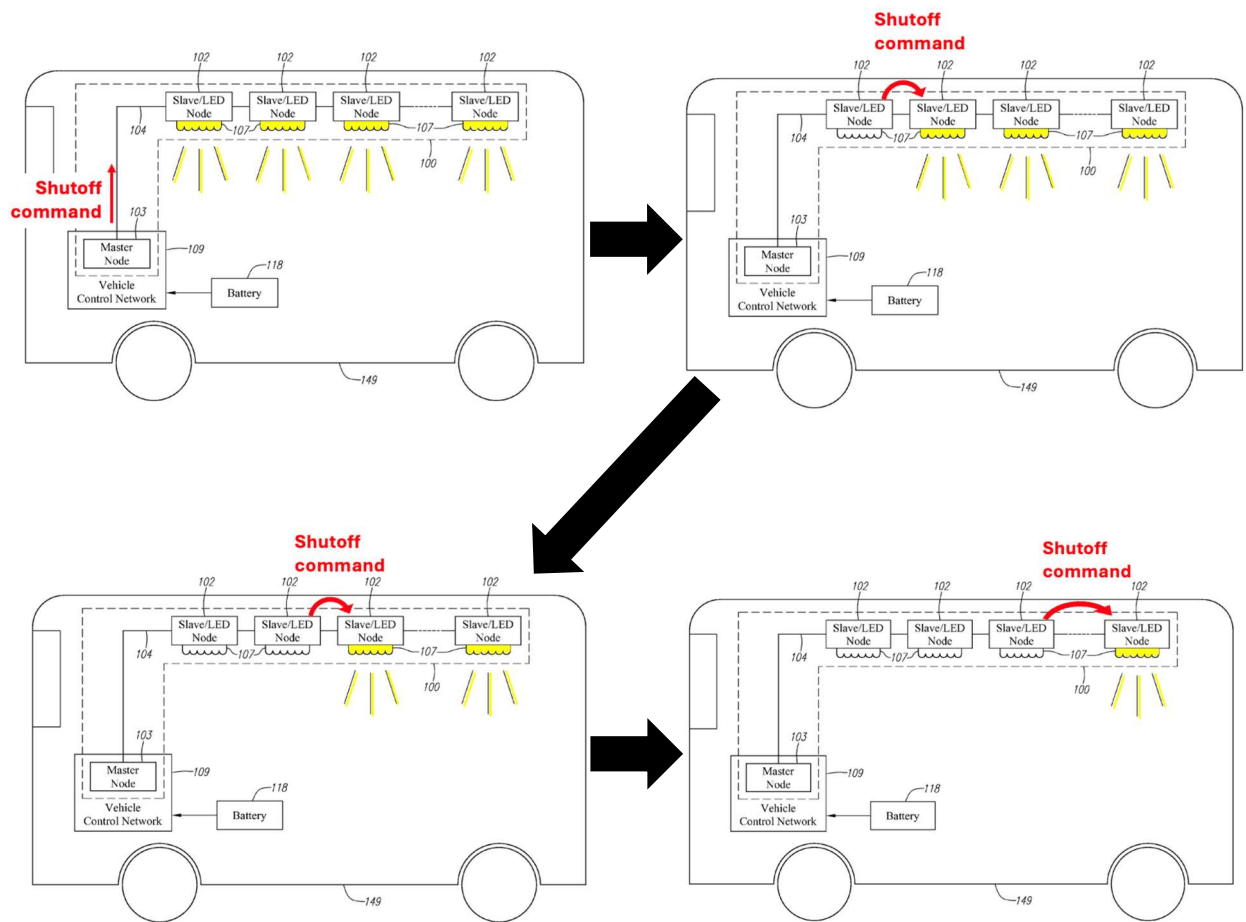


Diagram of Kuang's signal propagation based on Kuang Fig. 1 and [0034]

The diagram above illustrates how *Kuang's* shutoff command is sent from the master node to the first slave/LED node, which in turn sends the command to the second slave/LED node, and so forth. As a result, the slave/LED nodes would shut off their lights in a sequential manner. Lebbly, ¶ 76. The absence of synchronization in *Kuang* is not surprising; *Kuang's* lights are utilitarian lighting panels for a bus or a building, *Kuang* has no need for synchronous signals in addition to *Kuang's* on/off signals that the Petition maps to the “control signals” of 1[D]. See Pet. 16; Lebbly, ¶ 76.

In light of the manner in which *Kuang*'s master and slave nodes communicate, *Kuang* cannot disclose the “synchronous signals” of 1[D]. Lebby, ¶ 77.

First, *Kuang* does not meet Petitioner's own definition of “signals that are sent to the slave nodes to control their corresponding LED strings at the same time” (Pet. 16-17), because *Kuang*'s master shutoff command and other commands are sent to each slave node sequentially. The Petition cites nothing in *Kuang* that teaches commands being sent to the slave nodes at the same time, or the slave nodes acting on the commands at the same time. Lebby, ¶ 78.

Second, *Kuang* does not meet the Board's initial construction of “signals related to an activity(ies) occurring at the same time” (ID 44), because nothing in *Kuang* teaches slave nodes turning off lights at the same time, and because *Kuang* instead discloses sequential operation by propagating command signals from one slave node to the next. *See* Ex. 1004, [0034]; Lebby, ¶ 79.

Third, *Kuang* does not meet Patent Owner's construction of “signals related to activities governed by synchronized timing” (Section IV.A), because *Kuang* simply says nothing about shutoff being governed by synchronized timing. Lebby, ¶ 80.

Finally, Patent Owner maintains that Petitioner improperly maps the *same element* in *Kuang* for both the “synchronous signals” and the “control signals” of 1[D]. The Petition first maps “commands or queries” in *Kuang* to the “control

signals” of 1[D]. Pet. 16 (citing Ex. 1004 [0034]). The Petition then asserts that a master shutoff command – one of *Kuang*’s “commands or queries” – constitutes the “synchronous signals” of 1[D]. Pet. 17 (citing Ex. 1004 [0054]). In other words, Petitioner maps the same “control signals or queries” of *Kuang* to two different “signal” elements in 1[D] without addressing the distinction. Synchronous signals are separate from control signals in 1[D], because separately-listed claim elements “are ‘distinct component[s]’ of the patented invention.” *Dickinson*, 616 F.3d at 1254. The ’546 patent specification mirrors this language of 1[D] and supports the distinction between control signals and synchronous signals. *See id.*, 1:50-51, 2:66-67. Lebbby, ¶ 81. Petitioner’s failure to identify different elements in *Kuang* for the claimed “control signals” and “synchronous signals,” and Petitioner’s failure to articulate how *Kuang* meets these distinct requirements of 1[D], are additional fatal errors in Ground 1.

**B. *Lys* Does Not Disclose the Claimed “Synchronous Signals” in 1[D]
(Ground 3)**

The Petition does not articulate precisely which signals in *Lys* Petitioner contends are the “control signals” and the “synchronous signals” of 1[D] and the Petition fails to “specify where each element of the claim is found in the prior art patents or printed publications relied upon . . .” 37 C.F.R. § 42.104(b)(4). Indeed, nearly four pages of the Petition attempt to explain *Lys*’s disclosure of 1[D], without

ever revealing Petitioner’s actual theory of unpatentability. Lebbby, ¶ 82. Petitioner requires the Board, and Patent Owner, “to play archaeologist with the record.” *Johns Manville Corp. v. Knauf Insulation, Inc.*, IPR2015-01402, Paper 18 at 12-14 (PTAB Oct. 21, 2015) (rejecting petitioner’s arguments for failure to “make all arguments accessible to the Board” and articulate the obviousness ground).

As best understood by Patent Owner, the Petition sets forth three theories of how *Lys* meets the “control signals” and “synchronous signals” of 1[D]: (1) *Lys* discloses sending a “mode” signal and an “option” signal to a light source 24 (Pet. 32); (2) *Lys* discloses controlling light sources in a “coordinated fashion” with respect to other pool devices such as heaters or filters (Pet. 33); and (3) *Lys* discloses sending signals via four data paths (Pet. 33-35). Each of the three apparent theories fails to meet 1[D]. Lebbby, ¶ 83.

As to the first theory, the Petition never explains which of the “mode” and “option” signals in *Lys* constitute the claimed “control signals” or “synchronous signals.” Instead, the Petition discusses both types of signals in *Lys* with respect to both claim elements, and weaves the word “synchronous” throughout the discussion despite any such prior art teaching. At page 32, the Petition asserts that “*Lys* describes ‘illumination programs’ that must require the local or remote user interface to send synchronous signals to a plurality of LEDs to generate a desired overall effect for a particular ‘illumination program.’” Pet. 32 (citing Ex. 1008, 21:4-16). Aside

from Petitioner’s own self-serving characterizations, there is no basis for Petitioner to allege that *Lys*’s signals are “synchronous.” For example, a POSITA would have understood that *Lys*’s mode and option signals sent associated with selecting an “illumination program” do not necessarily need to be sent to multiple light sources at the same time. Lebbby, ¶ 85. Instead, a POSITA would have understood that communication within *Lys*’s system could operate in a sequential fashion in which *Lys*’s central controller sends signals to one light source at a time, reducing the complexity and processing power required of the central controller. Lebbby, ¶¶ 84-85.

As another example, a POSITA would have understood that *Lys*’s light source controllers could propagate or relay control signals to one another, as taught in *Kuang*. See Ex. 1004, [0034]. Petitioner points to nothing in *Lys* that discloses or requires that the mode and option signals associated with selecting an illumination program be sent to the light sources at the same time, or that the mode and option signals be governed by synchronized timing. Therefore, Petitioner’s first theory fails to establish that *Lys* discloses 1[D]. Lebbby, ¶ 86.

As to the second theory, the Petition quotes a portion of *Lys* that discloses controlling light sources in a “coordinated fashion.” Pet. 33 (citing Ex. 1008, 10:3-5). However, Petitioner’s fragmented quote omits the context of *Lys*’s disclosure. The full sentence of *Lys* states “[i]n one embodiment of the invention, one or more

of the light sources 24A-24I are controlled in a coordinated fashion with one or more other accessories (e.g., heaters, blowers, filtration and circulation systems, etc.) in the pool or spa environment.” Ex. 1008, 10:3-8. Here, *Lys* discloses light sources exchanging control signals with pool devices other than light sources, but says nothing about synchronous signals. Put another way, *Lys* does not disclose operating multiple light sources in a “coordinated fashion” involving LED strings operated at the same time (Petitioner’s definition of “synchronous signals”) or involving signals that are governed by synchronous timing (Patent Owner’s construction). Petitioner’s second theory fails to establish that *Lys* discloses 1[D]. Lebbby, ¶ 87.

As to the third theory, the Petition includes an annotated version of *Lys* Fig. 4A, highlighting data paths to four light source controllers. Pet. 35. Petitioner characterizes the data paths and signals sent over these paths as “synchronous,” alleging that *Lys* illustrates parallel connections. See Pet. 34-35. To support this theory, the Petition relies on Figs. 4A and 4B of *Lys*, as well as various lines of columns 17 and 18. See Pet. 33-35. Contrary to the Petition’s assertions, nothing in the cited portions of *Lys* discloses or requires the simultaneous transmission of control signals. A POSITA would have understood that *Lys*’s controller could have transmitted signals to different light controllers at different times, to reduce the complexity and computing power required of the central controller. Lebbby, ¶ 88. There is no mention of any signal involving synchronized timing in the cited portions

of *Lys*. Petitioner’s third apparent theory cannot prevail based on buzzwords such as “simultaneous” and “synchronous” that have no support in *Lys*. Therefore, Petitioner’s third apparent theory also fails. Lebbby, ¶ 88.

For the reasons above, Petitioner fails to set forth any evidence-based theory that *Lys* discloses the “synchronous signals” of 1[D]. Petitioner’s only evidence is Dr. Schubert’s Declaration, which repeats the Petition’s unsupported conclusions, and the lack of any factual support or analysis fails to bridge gaps between 1[D] and *Lys*. Lebbby, ¶ 89. Although the knowledge of a POSITA may, under certain circumstances, be relied upon to supply a missing claim limitation (*see, e.g., Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337–38 (Fed. Cir. 2020)), such reliance is improper where, as here, it is based merely upon “conclusory statements and unspecific expert testimony.” *Id.* (quoting *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366 (Fed. Cir. 2016)).

VII. GROUND 3 FAILS TO SHOW THAT *LYS* DISCLOSES THE CLAIMED “MASTER CONTROL UNIT” OF CLAIM 1

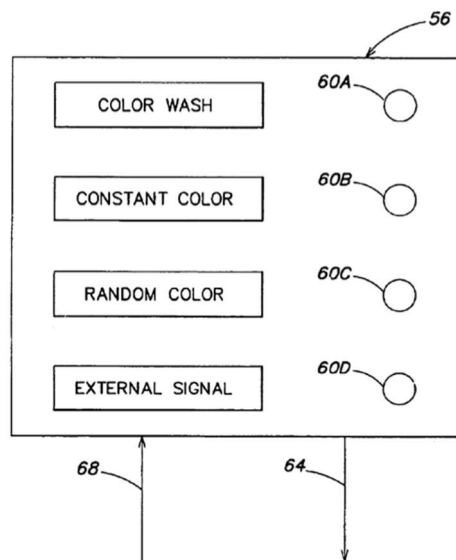
1[A] recites “a master control unit electrically connected to the direct current power source, including a microcontroller and a voltage regulator electrically connected to the microcontroller.” The Petition argues that either a “local user interface 43” or a “remote user interface 56” in *Lys* meets 1[A], but Petitioner is wrong. *See* Pet. 25-28; Lebbby, ¶ 90.

Regarding the “local user interface 43,” the Petition admits that “local user interface 43 can be a button, switch, or dial.” Pet. 25, citing *Lys* at 14:17-29. There is no evidence or explanation of record for the Board to find that *Lys*’s button, switch, or dial includes any microcontroller and any voltage regulator. With no evidentiary support, *Lys*’s button, switch, or dial on local user interface 43 amounts to a simple component to switch power to *Lys*’s LED lights. Lebbby, ¶91.

The Petition vaguely asserts that elements of the remote control interface 56 – an entirely different part of *Lys*’s system – could somehow be “combined and associated with local user interface 43.” Pet. 26. Neither Petitioner nor Dr. Schubert explains how a POSITA would have found it obvious to modify local user interface 43 based on the remote control interface 56, or how such a modified local user interface 43 would operate. Therefore, even based on the Petition’s own assertions, the “local user interface 43” in *Lys* does not meet the claimed “master control unit” in claim 1. Lebbby, ¶ 92.

Regarding the “remote user interface 56,” there is no showing that the remote user interface 56 includes a voltage regulator, as claimed. The Petition alleges that selectors 60A and 60B in the remote user interface 56 are voltage regulators, arguing that “a POSITA would have recognized that the selectors in *Lys* meet the “voltage regulator” limitation and further alleging that controlling/changing current is proportional to a changing voltage (per Ohm’s law).” Pet. 27. But nothing in the

record indicates that selectors 60A and 60B “control or change current,” or otherwise act as voltage regulators. Instead, *Lys* describes “remote user interface 56” like a remote control, and selectors 60A-60D are simple buttons. *See* Ex. 1008 at 13:40-54 (discussing selectors 60A and 60B generating “mode” and “options” signals), Fig. 5:



*Lys (Ex. 1008), Fig. 5 (showing remote user interface 56
and selectors 60A-60D)*

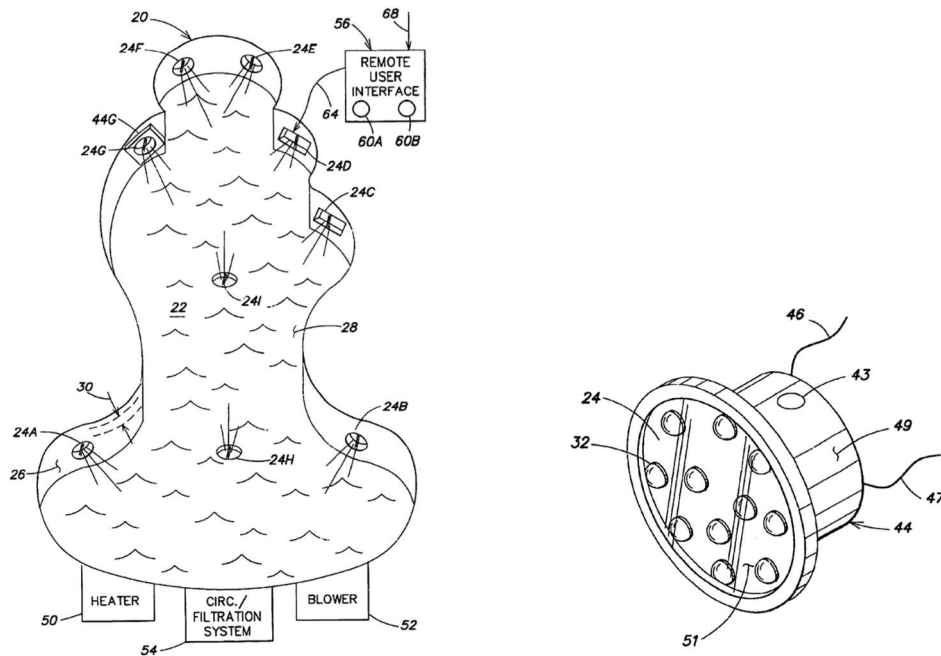
Petitioner and its expert appear to assume that selectors 60A and 60B include voltage regulators because they can change lighting mode, but these are mere unsupported assumptions. *Lebby*, ¶ 93; *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination.”).

At bottom, *Lys* does not support that remote user interface 56 includes the claimed voltage regulator, and the Petition provides nothing more than attorney argument, plus expert statement repeating the same argument and citing no support, in an attempt to bridge gaps between *Lys* and the claim limitation. Lebbby, ¶ 94. Therefore, Ground 3 of the Petition fails to establish obviousness of every element of independent claim 1.

VIII. GROUND 3 FAILS TO SHOW THAT *LYS* DISCLOSES THE CLAIMED “SECOND CURTAIN LAMP” OF CLAIM 8

8[D] recites “*a second curtain lamp* electrically connected to the alternating current voltage transferring to direct current voltage circuit” (emphasis added). Ground 3 asserts that *Lys* in combination with the knowledge of a POSITA renders independent claim 8 obvious, but Petitioner fails to establish that *Lys* discloses anything resembling “a second curtain lamp,” that is “electrically connected to the alternating current voltage transferring to direct current voltage circuit.” Lebbby, ¶ 95.

Lys discloses light sources for “illumination of liquids.” Ex. 1008 at Abstract. In Figures 3 and 4 of *Lys*, relied upon by Petitioner, *Lys* discloses “a light source for illumination in a pool or spa” and “a networked lighting system for illumination in a pool or spa environment,” respectively. *Id.*, 3:64-4:2. Figure 3 illustrates a round housing 44 for a waterproof lighting fixture:



Lys (Ex. 1008), Figs. 1 (left) and 3 (right)

Lebby, ¶ 96.

Petitioner alleges – several times – that a “curtain lamp” is “commonly understood to be one or more light strings,” Pet. 8, 25, 38, 51, 72, but does not cite any support or evidence for this allegedly “common understanding” of the claim term. Petitioner also makes no attempt to explain how the pool lighting fixtures and the light sources for illumination in a pool or spa of *Lys* disclose “**a second curtain lamp.**” See Pet. 44-46. For example, Petitioner does not explain how the light sources for illumination in a pool or spa of *Lys* constitute “one or more light strings” under Petitioner’s own definition of “curtain lamp.” See Pet. 38 (addressing 8[Pre]), 44-47 (addressing 8[D]). Therefore, the Petition does not, and cannot, establish that *Lys* meets 8[D] in Ground 3. Lebby, ¶ 97; see also Section V.

IX. GROUNDS 2 AND 4 FAIL, BECAUSE A POSITA WOULD NOT HAVE COMBINED *KUANG* OR *LYS* WITH *DEBEVEC*

The Petition asserts obviousness of dependent claim 3 based on *Kuang* in view of *Debevec* (Ground 2) or *Lys* in in view of *Debevec* (Ground 4). Pet. 20, 48. Both grounds again rely on unsupported positions refuted by the cited references. Lebby, ¶ 98.

Claim 3 recites “[t]he driving apparatus for light-emitting diode curtain lamp in claim 2, wherein the slave control unit includes a transistor electrically connected to the signal processor.” Petitioner relies upon *Debevec* (Ex. 1005) to provide a transistor missing from *Kuang* and *Lys*. Notably, *Debevec* was applied in an Office Action during prosecution, in which the examiner rejected claim 1 based on *Debevec* alone, and allowed dependent claim 3 of the ’546 patent (numbered claim 4 during prosecution) over *Debevec*. Ex. 1002 at 70-71; Lebby, ¶ 99. Just as claim 3 was found allowable over *Debevec* during prosecution, Grounds 2 and 4 based on *Debevec* cannot prevail.

A. *Kuang* + *Debevec* (Ground 2)

The Petition acknowledges that *Kuang* fails to disclose a “slave control unit” including “a transistor electrically connected to the signal processor” and asserts that claim 3 would have been obvious based on *Kuang* in view of *Debevec*. Pet. 20-22.

Petitioner is wrong, because a POSITA would not have modified *Kuang* based on *Debevec* as set forth in the Petition. Lebbby, ¶ 100.

Debevec discloses using a transistor as part of a “brightness feedback circuit” in a group controller, to calibrate the brightness of each light source based on temperature. Ex. 1005 [0078]; *see also* Pet. 21. Petitioner alleges that it would have been obvious to implement *Debevec*’s transistor as “an electronic switch or valve in *Kuang*’s lighting system to control the current flow through the LED light source.” Pet. 22. However, Petitioner fails to identify any deficiency in *Kuang* warranting the addition of *Debevec*’s transistor. Instead, *Kuang* already discloses the functionality that Petitioner seeks to add via *Debevec*’s transistor, rendering the combination unnecessary and unsupported. Lebbby, ¶ 101.

Kuang discloses a feedback system in which a controller receives feedback from a temperature sensor 430 or optical sensor 432 and adjusts LED current to adjust LED brightness. Ex. 1004 [0010], [0030], [0048], [0051], [0052]. *Kuang* also discloses a micro-controller that can turn LEDs on and off, and dim LEDs by pulse width modulation. *Id.*, [0035], [0054]. That is, the unmodified hardware of *Kuang* performs the operations of “an electronic switch or valve,” and *Kuang* includes a feedback system that adjusts LED brightness similar to *Debevec*. Lebbby, ¶ 102.

The Petition fails to establish that a POSITA would have been motivated to add *Debevec*’s transistor to *Kuang*. As a preliminary matter, *Debevec* and *Kuang* are

non-analogous to one another. *Debevec* discloses a lighting system for “postproduction and facial scanning, and to lighting systems in the shape of a geodesic sphere,” Ex. 1005, [0004], Fig. 1, whereas *Kuang* is directed to transit vehicle lighting, such as ceiling lights in a bus. Ex. 1004, Title, Abstract, [0003]. A POSITA would not have looked to *Debevec*’s geodesic sphere lighting system for making improvements to *Kuang*’s bus ceiling lights. Lebbby, ¶ 103.

The Petition does not identify any actual deficiencies in *Kuang*. Put another way, a POSITA would have understood that *Kuang* does not require *Debevec*’s transistor, and would not benefit from it. Petitioner does not explain why a POSITA would have added additional components to achieve the same result that *Kuang* already provides without modification, using its micro-controller. Lebbby, ¶ 103. For at least these reasons, Ground 2 fails to establish obviousness of claim 3 based on *Kuang* and *Debevec*.

B. *Lys* + *Debevec* (Ground 4)

Ground 4 is nearly identical to Ground 2 with respect to Petitioner’s reliance on *Debevec* and the obviousness analysis set forth in the Petition. *Compare* Pet. 20-22 with Pet. 48-49. The generic obviousness analysis in Ground 4 is untethered from and refuted by the disclosure of *Lys*. Lebbby, ¶ 104.

Petitioner alleges that controller 34 in *Lys* is the “slave control unit” of claim 2, from which claim 3 depends. Pet. 35-36. *Lys* discloses that the controller 34 controls light output and intensity of LED lights by adjusting a duty cycle of a pulse width modulated signal, or by providing variable analog signals. *Lys*, 11:21-52; Lebby, ¶ 105.

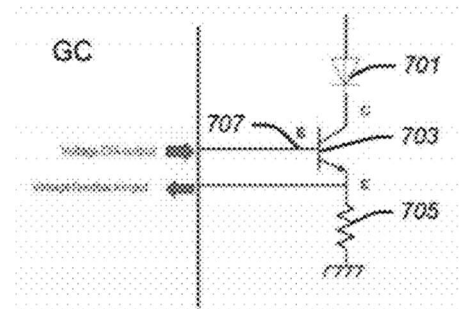
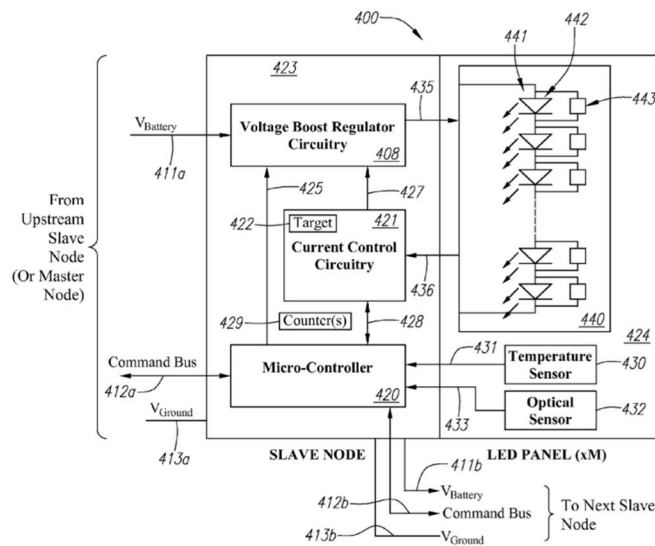
Despite *Lys* disclosing a controller 34 that changes lighting parameters, Petitioner alleges that it would have been obvious to add the transistor of *Debevec*, because “[i]n order to adjust the brightness of LEDs, or to switch them ON or OFF, an electric switch or valve is needed.” Pet. 48. Taking the same missteps as in Ground 2, Petitioner provides no explanation for why a POSITA would have *added* components to achieve the *same result* that *Lys*’s controller 34 provides without modification. A POSITA would not have been motivated to add components to *Lys*, because adding components would increase cost and complexity without enhancing *Lys*’s current functionality and capabilities. Lebby, ¶¶ 106-108.

Furthermore, *Lys* and *Kuang* are non-analogous references. *Debevec* discloses a lighting system for “postproduction and facial scanning, and to lighting systems in the shape of a geodesic sphere,” Ex. 1005, [0004], Fig. 1, whereas *Lys* discloses pool or spa lights, Ex. 1008, Abstract, 2:25-29. A POSITA would not have looked to *Debevec*’s geodesic sphere lighting system for improvements to *Lys*’s pool/spa lights. Lebby, ¶ 107.

C. Petitioner's Obviousness Analysis is Fatally Flawed and Deficient

Grounds 2 and 4 are fatally flawed and deficient for several additional reasons. For example, Petitioner does not explain how a POSITA would have integrated *Debevec's* transistor into the circuitry of *Kuang* or *Lys*, or explain what the modified circuit would have looked like. These omissions are especially critical because *Kuang* and *Lys* both disclose controllers that adjust LED brightness and output without adding *Debevec's* transistor. Lebbby, ¶ 109.

Petitioner also fails to explain *why* a POSITA would have had a reasonable expectation of success in modifying *Kuang's* or *Lys's* circuit to include additional components that would affect the operation of *Kuang's* or *Lys's* system. *See* Pet. 22, 48-49. Regarding the proposed combination with *Kuang*, the Petition does not address how the existing voltage boost regulator circuitry 408, current control circuitry 421, and micro-controller 420 in *Kuang* would be affected by the addition of *Debevec's* transistor that is implemented in *Debevec's* entirely different circuit:



Kuang (Ex. 1004) Fig. 4 (left), Debevec (Ex. 1005) Fig. 7 (right)

Similarly, regarding the proposed combination with *Lys*, the Petition does not address how the existing controller 34 would have been affected by the addition of *Debevec*'s transistor. Petitioner does not set forth any basis in Ground 2 for showing how, or why, a POSITA would have combined these disparate circuits. Lebbby, ¶ 109.

The Petition makes vague and unsupported assertions that “[e]lectronic circuits are known to be predictable” and that transistor circuit functionality “is not subject to unexpected results,” without providing any support for these statements or addressing the engineering challenges that would be involved in modifying *Kuang*'s and *Lys*'s complete and fully-functional systems. Pet. 22, 48-49. The Petition cites Dr. Schubert's Declaration that repeats the same conclusory statements as the Petition, and is entitled to little, if any weight. Lebbby, ¶ 110; 37 C.F.R. § 42.65(a). Petitioner bears the burden of persuasion and cannot satisfy its burden

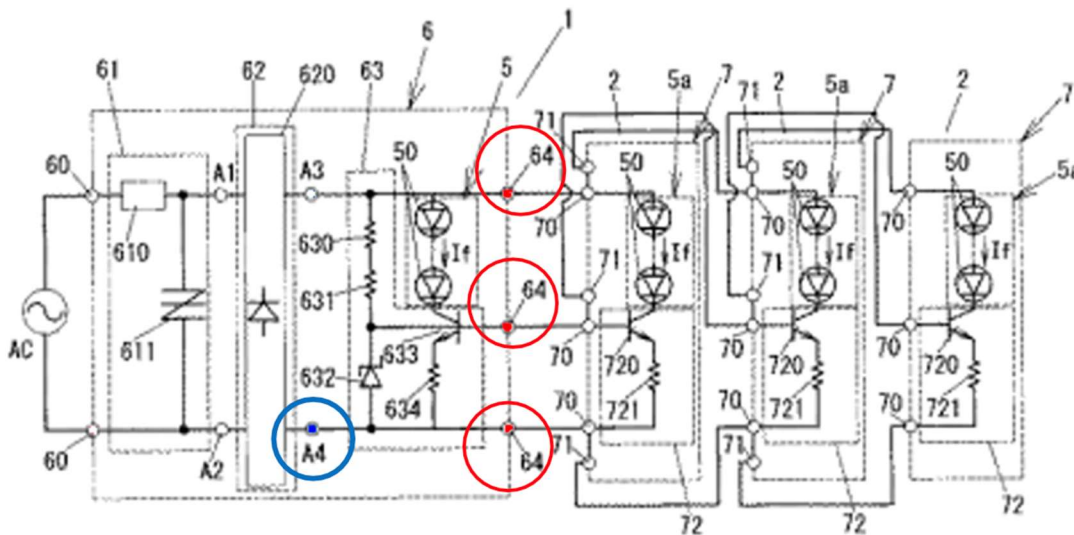
based on “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). While these issues are pervasive throughout each of the six obviousness grounds in the Petition as discussed in further detail in Section XIII, Grounds 2 and 4 are particularly deficient because they are built entirely upon “conclusory statements and unspecific expert testimony” that cannot support obviousness. *Arendi*, 832 F.3d at 1366.

X. THE BOARD SHOULD MAINTAIN ITS FINDING THAT GROUND 5 FAILS TO SHOW THAT *HIROYUKI* DISCLOSES THE CLAIMED “PIN[S]” OF CLAIM 4

4[A] recites “a master control unit including a *power negative terminal pin* of master control unit and a *signal output pin* of master control unit, the master control unit being electrically connected to the alternating current power source” (emphases added). 4[B] recites “a *signal output pin* of slave control unit, a *power positive terminal pin* of slave control unit, and a *power negative terminal pin* of slave control unit.” (emphases added). At institution, the Board agreed with Patent Owner that the Petition failed to establish that *Hiroiyuki* discloses the pins of 4[A]. ID 51-52. The Board should maintain its finding, and also find that *Hiroiyuki* fails to disclose the pins of 4[B]. Lebbby, ¶ 111.

The Petition maps “terminals 60” and “terminal units 64” in *Hiroiyuki* to the “power negative terminal pin” and the “signal output pin,” respectively, of 4[A]. Pet.

53-54. The Petition maps “terminal units 70” and “terminal units 71” to the “pins” recited in 4[B]. Pet. 56-60. Petitioner highlights terminal units 64 in the following circuit diagram from *Hiroyuki*, which also shows terminals 60, terminal units 70, and terminal units 71:



Hiroyuki (Ex. 1007) Fig. 1, as annotated by Petitioner in Pet. 54

A POSITA would have understood that Fig. 1 of *Hiroyuki*, above, shows a schematic of circuitry, and does not disclose physical connections such as the pins of 4[A] or 4[B]. Leiby, ¶ 112.

Hiroyuki’s “terminals” and “terminal units” are not disclosed as being pins, and Petitioner cannot establish otherwise. The Petition attempts to fill gaps between *Hiroyuki* and the claimed pins by proposing a definition of “pin” (Pet. 55, 60), but in doing so, effectively concedes *Hiroyuki*’s deficiencies. Citing to a dictionary, Petitioner states that “a POSITA would have understood a “pin” to be “[a] terminal

on a connector, plug, or tube base.” *Id.* (emphasis omitted), citing Ex. 1009 at 566. Citing to Dr. Schubert, the Petition further states that “[a] ‘pin’ can be understood as a pointed terminal.” Pet. 55, citing Ex. 1003 ¶ 100. Consistent with this definition, Petitioner has argued in a separate proceeding, with the support of Dr. Schubert and citing to another dictionary, that “[a] POSITA would have understood the references to “pins” to be metallic conductors.” IPR2024-00157, Paper 1 at 10-11, 12 (*citing* EX.1013 from IPR2024-00157,¹ and stating (“pin” means “[a] slender, straight, stiff prong used as a terminal”). Therefore, Petitioner has argued in at least two proceedings that a POSITA would have understood a “pin” to be a pointed terminal or a slender, straight, stiff prong. Lebbby, ¶ 113.

As Patent Owner previously explained and the Board has acknowledged, Petitioner’s proposed definition of “pin” does not make sense in the context of claim 4, because the claim already recites the word “terminal” in the term “terminal pin.” ID 51-52. Nevertheless, the Petition does not establish that *Hiroyuki* meets the claim term under Petitioner’s own definition, because the passages that Petitioner cites do not disclose or suggest “pins” under Petitioner’s own definitions. Lebbby, ¶ 114.

To bridge gaps between the claimed “pins” and *Hiroyuki*’s “terminals” and “terminal units,” the Petition leans on its definition of “pin.” However, in alleging

¹ EX.1013 from IPR2024-00157 is made of record in this proceeding as Ex. 2003.

that *Hiroyuki*'s terminals meet 4[A], Petitioner does not explain how *Hiroyuki*'s terminals are “on a connector, plug, or tube base” to satisfy the entirety of Petitioner's definition of pin. *See* Pet. 55, 60; Ex. 1009 at 556. Furthermore, Petitioner states that a pin is a “*pointed* terminal,” but does not establish that *Hiroyuki*'s terminals are pointed, or that such a modification to *Hiroyuki* would have been obvious to a POSITA. Leiby, ¶ 115.

In addition to the definitions of “pin” relied upon by Petitioner and Dr. Schubert in this proceeding and in IPR2024-00157, the Microsoft Computer Dictionary defines “pin” as follows:

pin

A slender prong. Pins are commonly encountered as the contacts protruding from a male connector. Connectors are often identified by the number of pins they have. Other types of pins are the spidery, leglike metal append- ages that connect computer chips to sockets on a circuit board or directly to the circuit board.

Ex. 2002. This definition is consistent with Petitioner's definitions, and the Petition fails to establish that *Hiroyuki* discloses or renders obvious any of these definitions of “pin” including, for example, a slender prong on a connector. Leiby, ¶ 116.

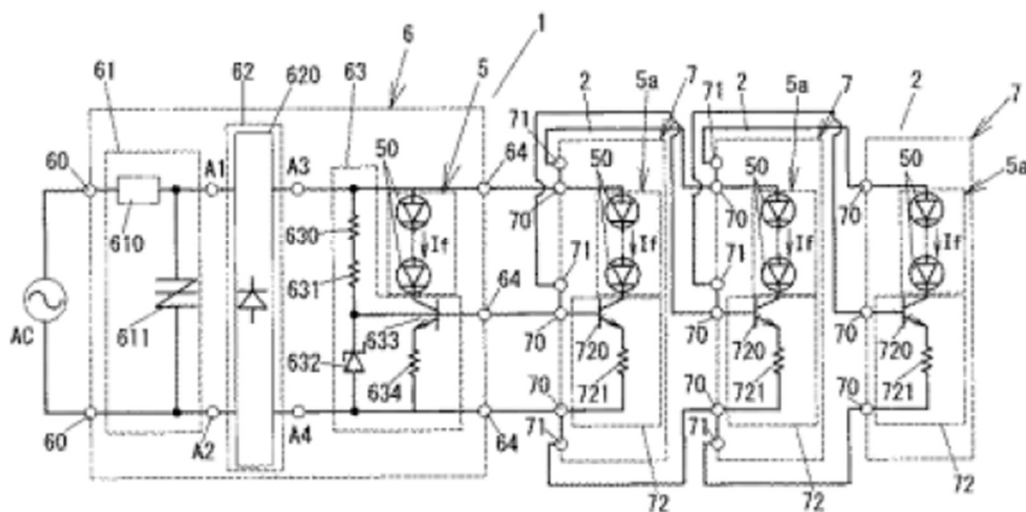
At most, the Petition shows that *Hiroyuki* discloses what it says, a “terminal.” 4[A] and 4[B], on the other hand, require various “terminal *pins*,” and the Petition

fails to establish that 4[A] and 4[B] would have been obvious based on *Hiroyuki*. Lebbby, ¶ 117.

XI. THE BOARD SHOULD MAINTAIN ITS FINDING THAT GROUND 6 FAILS TO SHOW THAT *HIROYUKI* DISCLOSES THE CLAIMED “SIGNAL PROCESSOR” OF CLAIM 8

8[B] requires that “the slave control unit includes *a signal processor*.” (emphasis added). The Petition argues that the “constant current circuit unit 72 of the slave drive unit” in *Hiroyuki* meets 8[B] because it “*acts as* a signal processor” and meets 8[B]. *See* Pet. 75-77. At institution, the Board found the Petition deficient with respect to 8[B], because neither the Petition nor Dr. Schubert’s declaration explained why a POSITA would have understood that a “constant current circuit unit 72” meets the “signal processor” of 8[B]. ID 55. Lebbby, ¶¶ 118-119. The Board should maintain its initial finding for the reasons below.

There is nothing in *Hiroyuki* indicating that the constant current circuit unit 72 is a “signal processor.” The figures of *Hiroyuki* do not show a “signal processor” and the Petition admits as much by resorting to arguing that a circuit “acts as” a signal processor. *See* Pet. 75-76. Instead, *Hiroyuki* describes that “the constant current circuit unit 72” includes “a transistor 720 and a resistor 721 connected in series.” *See* Ex. 1007 at [0030], Fig. 1:

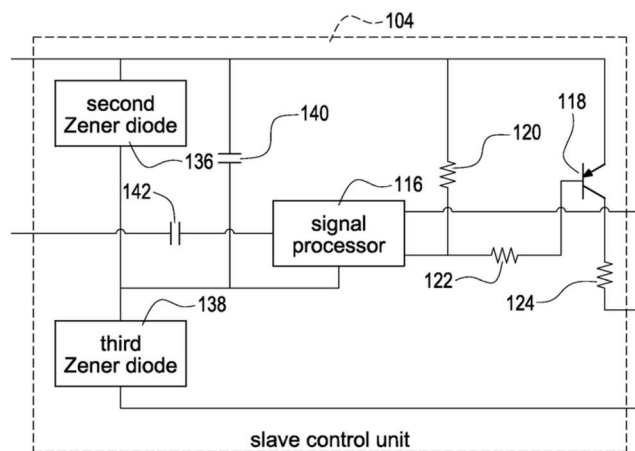


Hiroyuki (Ex. 1007), Fig. 1

Lebby, ¶ 120.

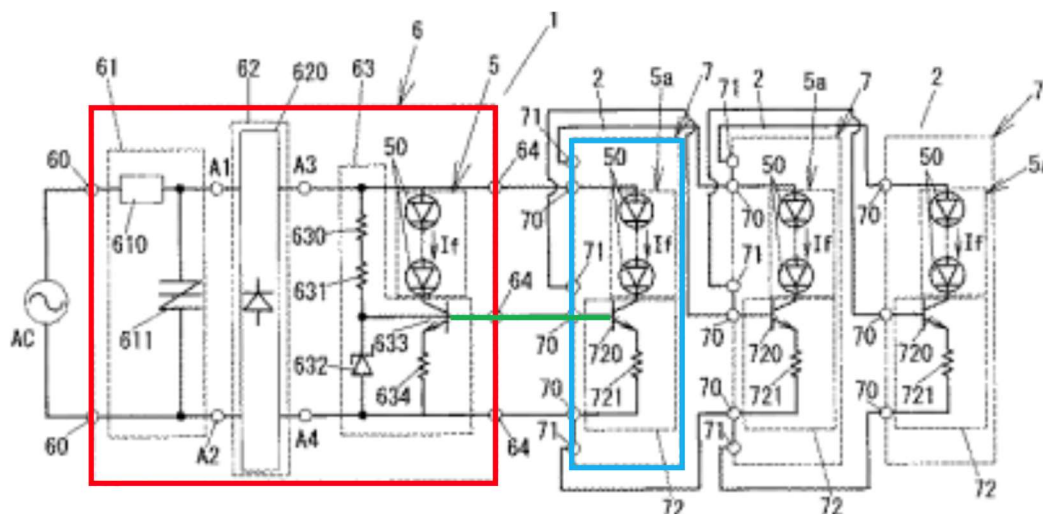
Petitioner alleges that “a POSITA would have understood the constant current circuit unit 72 in *Hiroyuki* to meet the ‘signal processor’ limitation as claimed because it regulates the power supply to keep its output current constant in spite of changes in load, line, or temperature.” Pet. 75-77 (citing *Hiroyuki* at [0030]). There is no support for this purported “understanding of a POSITA” other than Petitioner’s expert declaration, Ex. 1003 at ¶ 127, which says nothing more than the Petition. The function performed by *Hiroyuki*’s constant current circuit unit 72 is essentially a filter, but a POSITA would not consider this component of *Hiroyuki* to be a “signal processor” in the context of the ’546 patent, explained further below. Lebbby, ¶ 121.

Furthermore, the Petition fails to explain how a transistor 720 and a resistor 721 connected in series in *Hiroyuki* constitutes a “signal processor” in view of the disclosure of the ’546 patent. Fig. 6 of the ’546 patent illustrates an example of a slave control unit having a transistor 118 connected with resistors 122 and 124, *in addition to* signal processor 116 which is connected to the transistor 118:



'546 Patent (Ex. 1001), Fig. 6

Ex. 1001, 3:15-17, Figs. 3, 6. The ’546 patent suggests, such as in Fig. 6 above, that a “signal processor” is more than just a transistor and a resistor connected in series. In fact, the ’546 patent suggests that the signal processor 116 provides a signal that controls transistor 118. In contrast, *Hiroyuki* does not disclose anything like a signal processor in slave drive unit 7 being connected to transistor 720, because *Hiroyuki* shows that master drive unit 6 directly controls transistor 720:



- 1 Master unit
2 Slave unit
5. 5a LED group
50 LEDs
6 Master drive unit
62 Conversion circuit unit
7 Slave drive unit
63, 72 Constant current
circuit unit
AC current

Hiroiyuki, Fig. 1 (annotated highlighting master drive unit 6 in red, slave drive unit 7 in blue, and control line for transistor 720 in green)

As shown above, there is nothing in *Hiroyuki*'s **slave drive unit 7** (**blue**, above) that controls transistor 720, because transistor 720 is directly operated by **master drive unit 6** (**red**, above), by the connection highlighted in **green**, above. For these additional reasons, the Petition fails to sufficiently explain why *Hiroyuki*'s transistor and resistor should be interpreted as a "signal processor." Lebby, ¶ 122.

Furthermore, “signal” in the context of the ’546 patent is different than *Hiroyuki*’s constant power signal. The ’546 patent involves the transmission of

control signals and synchronous signals. Ex. 1001, Abstract, 1:50-51, 2:66-67, 3:41-43, 3:62-64, 6:7-10. These signals in the '546 patent are consistent with the dictionary definition of “signal,” which includes the definition of “an electrical quantity, such as a voltage, current, or frequency, that can be used to transmit information.” Ex. 2002. A POSITA would have understood that “signals” in the context of the '546 patent transmit information used to control the LED light strings. The '546 patent also discusses simple power lines that do not carry information, like the “constant current signal” of *Hiroyuki*. Petitioner admits that *Hiroyuki* fails to disclose a master control unit including a microcontroller (Pet. 68, 77), and *Hiroyuki* discloses a master drive unit 6 that directly controls the constant current circuit 72 of the slave drive unit 7 without a microcontroller or a signal processor. Lebbby, ¶ 123.

For the reasons above, the Petition fails to explain how *Hiroyuki* meets 8[B] in Ground 6, and Ground 6 cannot prevail with respect to at least 8[B] based on *Hiroyuki* in view of *Kuang*. Lebbby, ¶ 124.

XII. GROUND 6 FAILS TO SHOW OBVIOUSNESS OF ADDING A MICROCONTROLLER TO *HIROYUKI* IN CLAIMS 5, 6, AND 8

In addressing claim 5, Petitioner improperly asserts that *Hiroyuki*'s mention of a “circuit board” suggests the addition of a microcontroller from *Kuang*. Pet. 68. In addressing 8[B], the Petition incorporates the claim 5 analysis. Pet. 77. This

nonsensical proposition is wrong and the Petition fails to establish that it would have been obvious to add *Kuang*'s microcontroller to *Hiroyuki* in claims 5 and 8[B]. Lebbby, ¶ 125.

At the outset, the Petition acknowledges that *Hiroyuki* fails to disclose a master control unit having a microprocessor. Pet. 68. Instead, Petitioner asserts that a POSITA would have found it obvious to include the microcontroller of *Kuang* in *Hiroyuki*'s master drive unit. *Id.* The only apparent basis for this assertion in the Petition is that *Hiroyuki* discloses a circuit board, and that some circuit boards have microprocessors. *Id.* But nowhere does Petitioner or Dr. Schubert explain why it would have been obvious to a POSITA to *modify Hiroyuki's circuit board* – having a particular and complete set of electrical components – to add a microcontroller from *Kuang*'s entirely different system. Petitioner also does not cite any evidence supporting its position that the mere mention of a circuit board in *Hiroyuki* means that *Hiroyuki* “optionally includ[es] a microcontroller.” See Pet. 68. Lebbby, ¶¶ 126-127.

The Petition fails to explain the combination of *Hiroyuki* with *Kuang*, what it results in, or how it works. *Hiroyuki* discloses a master driving unit 6 having components and “circuit units” that perform *Hiroyuki*'s disclosed operations. *Hiroyuki*'s illumination apparatus is designed to be of “smaller size, thinner and lower cost.” Ex. 1007, Abstract, [0009], [0011], [0022]-[0026]. The Petition does

not explain how *Hiroyuki*'s circuit board would have been modified to add a microcontroller, explain what the resulting circuit would look like, or address how a microcontroller would affect the operation of the components in *Hiroyuki*'s already-complete device. Lebbby, ¶ 128.

The Petition fails to articulate any sound motivation for modifying *Hiroyuki* to include a microcontroller. *Hiroyuki* discloses a low-cost lighting device that is miniaturized, thin, and uses a “simple circuit structure.” Ex. 1007, Abstract, [0009], [0011], [0014], [0020]. Adding components such as microcontroller would only increase *Hiroyuki*'s cost, and potentially *Hiroyuki*'s size, both of which are changes that *Hiroyuki* endeavors to avoid. *Id.*; Lebbby, ¶ 129.

The Petition also does not identify any deficiency in *Hiroyuki*'s hardware that would require the addition of a microcontroller. Petitioner alleges that adding a microcontroller would “enable features (such as dynamically flashing LED lights) that are considered attractive and desirable.” Pet. 70. There is no basis for asserting that a POSITA would have desired to modify *Hiroyuki*'s lights to flash, or that flashing would have been “attractive.” Furthermore, *Hiroyuki* already discloses providing “pulsating DC power” to LEDs, and thus *Hiroyuki*'s apparatus can provide flashing light depending on the parameters of the pulsating power and the diodes used, without the need for a microcontroller. Lebbby, ¶ 130. Therefore, Petitioner

does not identify any deficiency in *Hiroyuki*'s hardware that would require the addition of a microcontroller. Lebbby, ¶ 130.

For these reasons, it would not have been obvious to a POSITA to modify *Hiroyuki* based on *Kuang*, and the Petition fails to establish obviousness of claim 5, claim 6 which depends from claim 5, or 8[B]. Lebbby, ¶ 131.

XIII. EACH OF GROUNDS 1-6 LACKS THE NECESSARY DEGREE OF PARTICULARITY TO SHOW OBVIOUSNESS

The Petition fails to clearly articulate the obviousness grounds for each of independent claims 1, 4, and 8, and in turn, obviousness for each claim that depends from the independent claims. Petitioner relies heavily on the “general knowledge of a POSITA” for essentially all its grounds, but provides no explanation of the differences, no motivation to combine or modify, and no discussion of likelihood of success. Specifically, the Petition asserts obviousness of independent claim 1 in Grounds 1 and 3, asserts obviousness of independent claim 4 in Ground 5, and asserts obviousness of independent claim 8 in Grounds 3 and 6. Pet. 3. Grounds 1, 3, and 5 cite the “general knowledge of a POSITA” as part of the obviousness grounds. *Id.* Ground 6 does not cite to the “general knowledge of a POSITA.” *Id.* As explained below, the Petition does not explain *how* or *why* any of the primary references are modified or combined with the “general knowledge of a POSITA,”

and indeed, there is no clear explanation of obviousness in any of these grounds. *See* Lebby, ¶¶ 109-110.

A. Grounds 1, 3, and 5 Do Not Explain Why or How the Claims Are Obvious in View of the “General Knowledge of a POSITA”

In each of Grounds 1, 3, and 5, Petitioner alleges obviousness based on one of *Kuang*, *Lys*, or *Hiroyuki* in view of the general knowledge of a POSITA. Pet. 3, 6, 23, 49. These grounds are problematic on their face for relying on the “general knowledge of a POSITA” to supply missing claim limitations, because “references to common sense, whether to supply a motivation to combine or a missing patent claim limitation, cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Samsung Electronics Co., Ltd. v. Mojo Mobility Inc.*, IPR2023-01086, Paper No. 10 at 20 (PTAB Feb. 13, 2024) (internal quotations omitted), citing *Arendi*, 832 F.3d at 1361-62.

Even more troubling, the Petition does not explain *how* or *why* the “general knowledge of a POSITA” is used in the obviousness combinations. Indeed, the Petition does not even attempt to address the first two *Graham* factors, because **Grounds 1, 3, and 5 do not:** 1) identify the scope and content of *Kuang*, *Lys*, or *Hiroyuki*; or 2) **acknowledge any differences between these references and the**

claims. Instead, Petitioner cites portions of the primary references for every claim element, and then conclusively asserts that a POSITA would have understood that the cited part of the reference meets the claim element. No explanation was made as to the differences between the reference and the claim element or how the POSITA’s general knowledge “meets” the claim element or such difference. In **no less than thirty-three instances**, Petitioner makes such unsupported assertions about what “a POSITA would have understood” to bridge gaps between the references and the claim language. *See*, Pet. 7-8, 14, 16-18, 25-29, 32-33, 36, 38, 40, 42, 46, 47, 51, 54, 55, 57-60, 62, 63, 66-68, 72, 77, 80. Each of the thirty-three assertions lacks any acknowledgement of a deficiency or difference between the references and the claims.

Here, Petitioner has left it to the Board to speculate on which of the features of the asserted art differs from the claims and how the asserted art would have been modified. Without the Petition’s identification of differences between the claims and the primary references, it is impossible to determine whether the Petitioner asserts that claim elements 1) are disclosed by the reference, 2) are inherent in the reference, 3) are lacking in the reference and are disclosed elsewhere, or 4) are obvious for other undisclosed reasons.

The absence of articulated differences also “renders it difficult to present, and have a patent owner and the Board analyze, whether a petitioner has set out ‘some

articulated reasoning with [some] rational underpinning to support the legal conclusion of obviousness.” *Analytics for Life, Inc.*, IPR2017-01742, Paper 9 at 14 (PTAB Jan. 31, 2018); *see also Front Row Techs., LLC v. MLB Advanced Media, L.P.*, IPR2015-01932, Paper 7 at 17 (PTAB Mar. 25, 2016) (denying grounds that fail to identify “any differences between the prior art . . . and the claims at issue, or provide a substantive analysis of why or how a person of ordinary skill in the art would have modified the prior art to render the claims obvious.”).

The Petition fails to explain what modifications are being proposed to the primary reference, or what the resulting combination/modification would be. “Failure on the part of a petitioner to explicitly identify a difference complicates an evaluation of obviousness.” *Johns Manville Corp.*, IPR2015-01402, Paper 18 at 12-14; *see also LG Electronics, Inc. v. Cellular Communications Equipment LLC*, IPR2016-00197, Paper 7 at 11 (Apr. 29, 2016). The Petition grounds do not make all arguments accessible to the Board and requiring the Board “to play archaeologist with the record.” *Johns Manville Corp. v. Knauf Insulation, Inc.*, IPR2015-01402, Paper 18 at 12-14 (PTAB Oct. 21, 2015).

B. Grounds 3 and 6 Have Dissimilar Reference Combinations, yet Both Rely on the “General Knowledge of a POSITA”

Petitioner’s inconsistent reliance upon “general knowledge of a POSITA” between Grounds 3 and 6 is even more confusing. Ground 3 includes “general knowledge of a POSITA” as part of the stated obviousness ground. Pet. 3. On the other hand, “general knowledge of a POSITA” is not part of obviousness Ground 6 stated in the Statement of Precise Relief Requested or in Ground 6 itself. Pet. 3, 66. Despite the dissimilar obviousness ground statements, Grounds 3 and 6 both rely on what “a POSITA would have understood” including, for example, when addressing the following terms of claim 8:

	Ground 3: “<i>Lys</i> in view of the general knowledge of a POSITA”	Ground 6: “<i>Hiroyuki</i> in view of <i>Kuang</i>”
Claim 8 term	Petition page(s) discussing “<i>knowledge of a POSITA</i>”	Petition page(s) discussing “<i>knowledge of a POSITA</i>”
“light-emitting diode curtain lamp” in 8 <pre></pre>	Pet. 38	Pet. 72
“slave control units” in 8[A]	Pet. 40	Pet. 77

“microcontroller” and “signal processor” in 8[B]	Pet. 42	Pet. 77 (also referring to page 68 for the discussion of “microcontroller”)
“electrically connected” in 8[D]	Pet. 46-47	Pet. 80

When addressing the same claim terms in Grounds 3 and 6, the Petition repeats the same assertions about what “a POSITA would have understood” even though the “general knowledge of a POSITA” is *not* identified as part of obviousness Ground 6. Thus, despite relying on the “general knowledge of a POSITA” to bridge gaps, Ground 6 does not purport to establish obviousness using the general knowledge of a POSITA. The Petition lacks vital explanation and clarity about what the Petitioner’s proposed grounds are, and how the references and supposed “general knowledge” are combined in the grounds. Given the differences between the grounds recited on page 3 of the Petition and the Petition’s nebulous reliance on the “general knowledge of a POSITA,” there is no clear statement of the relief requested and a thorough explanation of the unpatentability grounds. *See, e.g., Shopkick, Inc. v. Novitaz, Inc.*, IPR2015-00279, Paper No. 7 at 29 (PTAB May 29, 2015).

C. The Petition Does Not Explain Any Motivation for Modifying the Primary References

Each of the six obviousness grounds lacks a clear articulation of a motivation to combine or modify the references. “Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). A complete obviousness analysis requires an “explanation of how the teachings of the references would be arranged or combined or why a person of ordinary skill would have made the combination” and “some reason why a person of ordinary skill in the art would have thought to combine particular available elements of knowledge, as evidenced by the prior art, to reach the claimed invention.” *Heart Failure Techs., LLC v. Cardiokinetix, Inc.*, IPR2013-00183, Paper 12, at 9 (PTAB Jul. 31, 2013) (citing *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)). By failing to do so here, the Petition fails to establish a reasonable likelihood of success for any ground.

For example, Ground 1 alleges that claims 1 and 2 are obvious based on *Kuang* in view of the general knowledge of a POSITA. Pet. 3. Petitioner relies upon what “a POSITA would have understood” *six times* to bridge gaps between *Kuang*’s disclosure and independent claim 1. Pet. 7-9, 14, and 16-17. Not once does Petitioner ever admit what is missing from *Kuang*, or provide any factual underpinnings to

explain why or how a POSITA would have been motivated to modify *Kuang* based on the general knowledge of a POSITA to reconstruct the claimed invention. In Ground 3, Petitioner repeats the same pattern in addressing independent claims 1 and 8, invoking the knowledge of a POSITA again without acknowledging any deficiencies in *Lys* or alleging any motivation to modify *Lys*. *See* Pet. 25-29, 32-34. 38, 40, 42, 46, and 47.

Addressing independent claim 4, Ground 5 follows the same pattern. *See* Pet. 51, 54, 55, 57-60, 62, 63, 65, and 66. Ground 5 states that element 4[D] is “obvious over *Hiroyuki* in view of the general knowledge of a POSITA.” *Id.*, 65. Assertions were made about series and parallel circuits, assumptions about voltage levels in *Kuang*’s circuit, and the general knowledge of electrical circuits. *Id.*, 65-66. But there is not a single citation to any evidence for these assertions. Dr. Schubert’s declaration is similarly lacking by repeating the petition verbatim, which should be given no weight as discussed in further detail below in Section XIV. Petitioner alleges that series and parallel circuits “are two basic circuit configurations,” *id.*, 65-66, but does not explain why a POSITA *would have been motivated* to change *Kuang*’s existing circuitry, apply a different circuit layout, alter the operation of *Kuang*’s components, or make these changes to achieve different effects. For these additional reasons, Ground 5 fails to sufficiently set forth a motivation to modify *Kuang* to meet independent claim 4.

Ground 6 also addresses independent claim 8 and lacks sufficient reasoning for modifying *Hiroyuki* based on *Kuang*. Ground 6 largely repeats the same deficient pattern of discussing what “a POSITA would have understood” without acknowledging any deficiencies or explaining motivations to modify *Hiroyuki* to meet the claimed invention. *See* Pet. 72, 77, and 80. In discussing 8[B], the Petition refers to the discussion of claim 5 about adding *Kuang*’s microcontroller to *Hiroyuki*’s circuit board. Pet. 77, referring to 68-70. Petitioner’s only basis for modifying *Hiroyuki* to add *Kuang*’s controller is the unsupported assertion that *Kuang*’s “microcontroller would enable features (such as dynamically flashing LED lights) that are considered attractive and desirable.” *See* Pet. 70, and 82. Petitioner does not explain how *Hiroyuki* is deficient in its ability to provide “desirable” lighting, and fails to identify any other deficiency in *Hiroyuki*’s circuitry that would warrant adding a microcontroller, other than sheer hindsight to reconstruct claim 8. Petitioner also does not explain why a POSITA would have found it obvious to add a microcontroller to the specific circuit arrangement in *Hiroyuki*, and what effect the microcontroller from *Kuang* would have on the existing circuitry of *Hiroyuki*. Ground 6, like Grounds 1, 3, and 5, is fatally flawed for lacking a complete obviousness analysis.

D. The Petition Fails to Show Reasonable Expectation of Success

Each of the six obviousness grounds fails to allege or explain a reasonable expectation of success in modifying the primary reference. “[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)). “[T]he expectation of success must be founded in the prior art, not in the applicant’s disclosure.” *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988). Petitioner has failed to carry its burden in establishing a reasonable expectation of success as required for a complete obviousness analysis.

Regarding Grounds 1, 3, and 5, the Petition does not even allege any reasonable expectation of success. This fatal omission is readily apparent from the table of contents in the Petition. *See* Pet. ii, iii. Nowhere in Ground 1 (Pet. 6-20), Ground 3 (Pet. 23-48), or Ground 5 (Pet. 49-66) does the Petition discuss a “reasonable expectation of success.”

Grounds 2, 4, and 6 include a bare assertion that “a POSITA . . . would have had a reasonable expectation of success.” Pet. 21, 48, and 81. Aside from reciting these words, the Petition does not explain why a POSITA would have reasonably

expected success. Patent Owner addresses the deficiencies of Grounds 2 and 4 in further detail in Section IX, above.

For the reasons above, each of obviousness Grounds 1-6 lacks a sufficient showing of reasonable expectation of success, and the Petitioner cannot prevail on any of the six obviousness grounds.

XIV. THE PETITION RELIES ENTIRELY ON AN UNSUPPORTED DECLARATION THAT CARRIES NO WEIGHT

The Petition cites to the declaration of Dr. Schubert (Ex. 1003) as the sole support for all obviousness positions. But the expert declaration adds nothing to the analysis in the Petition, because the declaration simply repeats unsupported attorney argument. For this additional reason, the Petition lacks the requisite analysis and evidence of obviousness needed to satisfy Petitioner's burden of persuasion, and none of the grounds can prevail.

Under 37 C.F.R. § 42.65(a), “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” According to the Director, the Board should give little weight to the Petitioner's expert where “the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner's conclusory arguments.” *Xerox*, IPR2022-00624, Paper 12 at 5. The Federal Circuit has also held that “adopting an argument that the petitioner has not sufficiently

made” constitutes error under the Administrative Procedure Act. *Apple Inc.*, 81 F.4th at 1360.

At institution, the Board acknowledged that Dr. Schubert’s declaration (Ex. 1003) “closely mirrors” the Petition and “may provide little help to the Board.” ID 20. Although the Board found sufficient “technical reasoning” in Dr. Schubert’s declaration to support institution, Patent Owner maintains that Dr. Schubert’s testimony lacks any evidentiary support or directly contradicts the teachings of the cited references, as explained throughout this Response.

Dr. Schubert’s declaration embodies everything that the Director warned against in the *Xerox* decision, and is replete with such conclusory, unsupported, and Petition-mirroring assertions that should carry no weight. See *Wellmatics, LLC et al. v. Canatex Completions Solutions, Inc.*, IPR2023-01149, Paper No. 8 at 16 (PTAB January 8, 2024).

XV. CONCLUSION

For at least the reasons provided above, the Petition should be denied.

Respectfully submitted,

Dated: August 12, 2024

By: /Ming-Tao Yang/
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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S RESPONSE** contains 12,366 words, excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: August 12, 2024

/Ming-Tao Yang/
Ming-Tao Yang, Reg. No. 62,019
Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that copies of the foregoing **PATENT OWNER'S RESPONSE** was served on August 12, 2024, via e-mail directed to counsel of record for the Petitioner at the following:

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