

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAVANT TECHNOLOGIES LLC d/b/a GE LIGHTING and
LEDVANCE LLC,
Petitioner,
v.
FEIT ELECTRIC COMPANY, INC.,
Patent Owner.

IPR2024-01357 (Patent 8,604,678 B2)

SAVANT TECHNOLOGIES LLC d/b/a GE LIGHTING,
ELONG INTERNATIONAL USA INC., and
XIAMEN LONGSTAR LIGHTING CO. LTD,
Petitioner,
v.
FEIT ELECTRIC COMPANY, INC.,
Patent Owner.

IPR2025-00260 (Patent 8,604,678 B2)

Before THOMAS L. GIANNETTI, KEVIN W. CHERRY, and
ANDREW L. NALVEN, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND
37 C.F.R. § 42.121(e)

I. INTRODUCTION

On March 5, 2025, in IPR2024-01357 (the ‘1357 IPR”), we instituted trial as to claims 1–3, 6, 7, 9, 10, 16–21, 25, 26, and 29 of U.S. Patent No. 8,604,678 B2 (Ex. 1001, the “’678 patent”). ‘1357 IPR”, Paper 17.¹ After institution, Patent Owner filed a Motion to Amend that is contingent on the patentability of claims 1–3, 6, 7, 9, 10, 16–21, 25, 26, and 29. *Id.*, Paper 27 (“Motion”).

On June 23, 2025, in IPR2025-00260 (the “’260 IPR”), we instituted trial as to claims 1 and 11–14 of the ‘678 patent. ‘260 IPR, Paper 17. Due to the similarity of the two proceedings involving the same patent and parties, we exercised our discretion to consolidate the ‘260 IPR with the ‘1357 IPR for trial. *Id.* at 8. After institution of the ‘260 IPR and consolidation of the proceedings, Patent Owner filed a Supplemental Motion to Amend (Paper 35, “Supp. Motion”) that is contingent on the patentability of claims 11–14. Petitioner filed an opposition to both the Motion and Supplemental Motion (Paper 41, “Opp.”).

In both the Motion and Supplemental Motion, Patent Owner requested preliminary guidance in accordance with 37 C.F.R. § 42.121(a)(1)(ii). Motion 1; Supp. Motion 1; *see* 37 C.F.R. § 42.121(e)(1); *see also Rules Governing Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board*, 89 Fed. Reg. 76,421 (Sept. 18, 2024) (“Final Rule”).

In this Preliminary Guidance, we provide our initial, preliminary, non-binding views on whether Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a

¹ In this Preliminary Guidance, we cite to papers and exhibits filed or entered in IPR2024-01357, unless specified otherwise.

motion to amend in an *inter partes* review and whether Petitioner establishes a reasonable likelihood that the substitute claims are unpatentable. 37 C.F.R. § 42.121(e)(1), (2); *see also* 35 U.S.C. § 316(d) (statutory requirements for a motion to amend); 37 C.F.R. § 42.121(a)(2), (a)(3), (b) (regulatory requirements and burdens for a motion to amend); *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential) (providing information and guidance regarding motions to amend). The reasonable likelihood standard this Preliminary Guidance applies differs from the preponderance of the evidence standard applied when ultimately deciding the Motion. *Compare* 37 C.F.R. § 42.121(e)(1) *with* § 42.121(d). Further, this preliminary guidance is not a “decision” for purposes of rehearing under 37 C.F.R. § 42.71(d). 37 C.F.R. § 42.121(e)(2).

For purposes of this Preliminary Guidance, we focus on the proposed substitute claims, and specifically on the amendments proposed in the Motion and Supplemental Motion. *See* 37 C.F.R. § 42.121(e)(1); Final Rule, 89 Fed. Reg. at 76,425. We do not address the patentability of the originally challenged claims. *See id.* Moreover, in formulating our preliminary views, we have not considered the parties’ other substantive papers on the underlying merits of Petitioner’s challenges. The views expressed in this Preliminary Guidance are subject to change upon consideration of the complete record, including any revision to the Motion or Supplemental Motion filed by Patent Owner. Further, this Preliminary Guidance is not binding on the Board when rendering a final written decision or any other subsequent decision in this proceeding. 37 C.F.R. § 42.121(e)(2); *see Medytox, Inc. v. Galderma S.A.*, 71 F.4th 990, 1000 (Fed. Cir. 2023).

II. PRELIMINARY GUIDANCE

A. Statutory and Regulatory Requirements

Patent Owner bears the ultimate burden to show that its motion to amend complies with the statutory and regulatory requirements of 35 U.S.C. § 316(d)(1), (3) and 37 C.F.R. § 42.121(a)(2), (a)(3), (b)(1), and (b)(2). 37 C.F.R. § 42.121(d)(1).² For the reasons discussed below, at this stage of the proceeding, and based on the current record, Patent Owner has shown a reasonable likelihood that it has satisfied some, but not all, of the statutory and regulatory requirements associated with filing a motion to amend. *See* 37 C.F.R. § 42.121(e)(1). Specifically, Patent Owner has failed to provide a proper showing of written description support in the original disclosure for the proposed substitute claims. Patent Owner has met the remaining statutory and regulatory requirements.

1. Reasonable Number of Substitute Claims

A motion to amend must propose a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B); 37 C.F.R. § 42.121(a)(3).

Patent Owner proposes no more than one substitute claim for each of challenged claims 1–3, 6, 7, 9–14, 16–21, 25, 26, and 29. Motion 2, 3, App. A (proposing substitute claims 30–45); Supp. Motion 2, 3, App. A (proposing substitute claims 46–49). We presume one substitute claim per challenged claim to be reasonable. 37 C.F.R. § 42.121(a)(3). Petitioner does not argue otherwise. *See generally* Opp.

² The following regulatory requirements for amendments are described in *Lectrosonics*: (1) presents a reasonable number of substitute claims; (2) responds to a ground of unpatentability involved in the trial; (3) no enlargement of the scope of the claims; and (4) no new matter. *Lectrosonics*, Paper 15 at 4–8.

We determine that Patent Owner proposes a reasonable number of substitute claims.

2. Responds to Ground of Unpatentability

A motion to amend must respond to a ground of unpatentability involved in the proceeding. 37 C.F.R. § 42.121(a)(2)(i).

Patent Owner responds to the grounds of unpatentability on which we instituted trial. Motion 3, 12–16; Supp. Motion 3, 7–9. Upon review of Patent Owner’s arguments, we agree that independent claims 30, 40, and 45, and dependent claims 31–39, 41–44, and 46–49 recite new limitations and new combinations of limitations that directly respond to the grounds of unpatentability involved in the trial. *See* Motion 12–16, App. A; Supp. Motion 7–9, App. A. Petitioner does not argue otherwise. *See generally* Opp.

We determine that the Motion and Supplemental Motion respond to a ground of unpatentability involved in these consolidated proceedings.

3. Scope of Amended Claims

A motion to amend may not enlarge the scope of the claims of the patent. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii).

Patent Owner contends that the proposed substitute claims do not broaden the claim scope because “[e]very limitation of each original claim is present in the corresponding proposed substitute claim,” and the amendments “add novel and nonobvious features that further distinguish over the prior art underlying the grounds advanced in this proceeding.” Motion 11 (citing *Lectrosonics*, Paper 15 at 7; Supp. Motion 6 (same)). We determine that Patent Owner’s Motion and Supplemental Motion do not enlarge the scope of the claims of the ’678 patent because they only add narrowing limitations, as explained below.

Proposed substitute independent claim 30 includes narrowing limitations as compared to corresponding original independent claim 1. *See* Motion 11–12, App. A, A1. Proposed substitute claims 31, 32, 46, and 48, which depend directly or indirectly from claim 30, include further narrowing limitations as compared to corresponding original dependent claims 2, 3, 11, and 13, respectively. *See* Motion 11–12, App. A, A1–A2; Supp. Motion 6–7, App. A, A1.

In addition, proposed substitute independent claims 40 and 45 include narrowing limitations as compared to corresponding original independent claims 19 and 29, respectively. *See* Motion 11–12, App. A., A4, A6.

Proposed substitute dependent claims 33–39, 41–44, 47, and 49 do not add new limitations. *See* Motion App. A, A2–A3, A4–A5; Supp. Motion App. A, A1–A2. Claims 33 and 34 depend from narrowed substitute claim 32, claims 35–39 depend directly or indirectly from narrowed substitute claim 30, claims 41–44 depend from narrowed substitute claim 40, and claims 47 and 49 depend from narrowed substitute claims 46 and 48, respectively. Because they depend from narrowed substitute claims, claims 33–39, 41–44, 47, and 49 do not enlarge the scope of the claims of the challenged patent. *See* Motion App. A, A2–A3, A4–A5; Supp. Motion App. A, A1–A2.

In the Opposition, Petitioner contends that “[t]he proposed substitute claims are not limited by device architecture, yet the specification’s entire substantive technical disclosure is confined to so-called ‘remote’ phosphor systems.” Opp. 9 (citing Ex. 1001, 1:56–63). Petitioner argues that “[b]y claiming a combination of the two disparate categories [i.e., remote and non-remote phosphor systems], Patent Owner improperly broadens the claims.” *Id.* at 10.

Petitioner’s argument is not persuasive. While the proposed substitute claims do not appear to necessarily exclude non-remote phosphors (e.g., phosphor

materials “mixed with light transmissive materials, such as silicone or epoxy material, and the mixture applied to the light emitting surface of the LED die,” they do not require them. Ex. 1001, 1:56–58. On the other hand, the proposed substitute claims recite “a wavelength conversion layer comprising particles of at least one photoluminescence material,” e.g., remote phosphor materials. Motion App. A, A1, A4, A6; Ex. 1001, 1:59–63. Compared to the corresponding original claims, the proposed amended claims do not newly require a combination of remote and non-remote phosphor systems and thereby expand the scope of the claims. Petitioner does not explain why the proposed amendments require non-remote phosphors. Thus, Petitioner’s argument is not commensurate with the scope of the proposed substitute claims.

Petitioner also contends that the proposed substitute claims “improperly combine the aspirational benefit of the nano-particle regime with the alleged on-state benefits of the micro-particle regime,” and “[b]y doing so, [Patent Owner] seeks to improperly expand the scope of the claims.” Opp. 12. This is more of an argument over whether there is support for the proposed amendments than whether the claims have been broadened. For example, Petitioner does not explain how adding narrowing limitations, whether supported or not, enlarges the scope of the amended claims. We address the question of “new matter” *infra*.

4. New Matter

A motion to amend may not introduce new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). We preliminarily determine that Patent Owner has not established that the Motion and the Supplemental Motion do not introduce new subject matter because Patent Owner has not set forth sufficient written description support for the proposed substitute claims, as explained below.

a. Patent Owner's Written Description Support

Patent Owner explains that the '678 patent issued from U.S. App. No. 13/273,212, filed on October 13, 2011 (Ex. 1004, 6–88, the "'212 application"), which is a continuation-in-part of U.S. App. No. 13/253,031, filed on October 4, 2011, and which claims priority to U.S. Provisional App. No. 61/427,411, filed on December 21, 2010 (Ex. 2027, the "'411 provisional") and U.S. Provisional App. No. 61/390,091, filed on October 5, 2010 (Ex. 2028, the "'091 provisional"). *See* Motion 4. Patent Owner provides tables identifying written description support for the new limitations of substitute claims 30–32, 40, 45, and 46–49 in the '678 patent specification (*see* Ex. 1001), the '411 provisional, and the '091 provisional. *See* Motion 4–11; Supp. Motion 4–6.

For the reasons that follow, however, Patent Owner has not set forth sufficient written description support for the proposed substitute claims in accordance with the relevant sections of 37 C.F.R. and the precedential *Lectrosonics* decision.

A motion to amend is required to set forth the support "in the original disclosure of the patent." 37 C.F.R. § 42.121(b)(1); *Lectrosonics*, Paper 15 at 7–8 ("[i]mportantly, to meet this requirement, citation should be made to the original disclosure of the application, as filed, rather than to the patent as issued"). The Motion (*see* Motion 5, 7–9, 11) and Supplemental Motion (*see* Supp. Motion 5–6) do not set forth the support in the '212 application, the original disclosure of the '678 patent that was filed October 13, 2011, as is required, but instead set forth disclosure in the patent as issued in December 2013.

A motion to amend must also identify written description support for "each proposed substitute claim *as a whole*, and not just the features added by the amendment." *Lectrosonics*, Paper 15 at 8 (emphasis added). This requirement

“applies equally to independent claims and dependent claims, even if the only amendment to a dependent claim is in the identification of the claim from which it depends.” *Id.* Patent Owner does not meet this requirement in full. The Motion and Supplemental Motion identified written description support for only the new features added to proposed substitute claims 30, 31, 32, 40, 45, 46, and 48, and not for each proposed substitute claim “as a whole.” *See* Motion 4–11 (showing support for only claim elements 30[d], 31[b], 32[b], 40[b][4], and 45[g]); Supp. Motion 4–6 (showing support for only claim elements 46[b] and 48[b]). And Patent Owner does not identify written-description support for any of proposed substitute claims 33–39, 41–44, 47, and 49. *See id.*

To provide further guidance, we address below whether Patent Owner did identify support for the features added by amendment, in view of Petitioner’s arguments to the contrary in the Opposition.

b. All Claims

Petitioner contends that “[t]he proposed substitute claims are not limited by device architecture, yet the specification’s entire substantive technical disclosure is confined to so-called ‘remote’ phosphor systems.” Opp. 9 (citing Ex. 1001, 1:56–63). Petitioner argues that “[b]y claiming a combination of the two disparate categories [i.e., remote and non-remote phosphor systems], Patent Owner . . . introduces new matter.” *Id.* at 10.

Petitioner’s argument is not persuasive for the reasons discussed above in connection with the scope of amended claims. While the proposed substitute claims do not appear to necessarily exclude non-remote phosphors, they do not require them either. On the other hand, the proposed substitute claims recite “a wavelength conversion layer comprising particles of at least one photoluminescence material,” e.g., remote phosphor materials. Motion App. A,

A1, A4, A6; Ex. 1001, 1:59–63. Petitioner does not explain why the proposed amendments require non-remote phosphors. Accordingly, Petitioner’s argument is not commensurate with the scope of the proposed substitute claims.

c. Claim 31

The new limitation in proposed substitute claim 31 recites “wherein the portion of excitation light generated by the light emitting device and directed back at the wavelength conversion layer reduces the wavelength conversion layer material necessary for a given color emission product.” Motion App. A, A1. According to at least one of the disclosures in the ’678 patent specification cited for substitute claim 31,

the use of a light diffusing layer having an appropriate particle size and concentration per unit area of the light diffractive material can substantially reduce the quantity of phosphor material required to generate a selected color of emitted light, since the light diffusing layer increases the probability that a photon will result in the generation of photoluminescence light by directing light back into the wavelength conversion layer. *Therefore, inclusion of a diffusing layer in direct contact with the wavelength conversion layer can reduce the quantity of phosphor material required to generate a given color emission product, e.g., by up to 40%.*

Ex. 1001, 3:21–32 (emphasis added); *see also* Motion 7 (citing the same); Ex. 2027, 5 (“Moreover the use of a light diffusing layer can substantially reduce the quantity of phosphor material required to generate a selected color of emitted light.”). At this stage, we consider the new limitation in substitute claim 31 to be supported by the teachings in the ’678 patent specification, as it would have been understood by one of ordinary skill in the art.

Petitioner contends that “[t]here is no disclosure providing written description support for reducing the amount of phosphor in a device with distinct ‘light diffusing’ and ‘wavelength conversion’ layers as also required by the

claims.” Opp. 11. Petitioner’s argument is misplaced because it ignores embodiments described in the ’678 patent specification, such as the embodiment discussed above that describes reduction of the quantity of phosphor material required to generate a given color emission product by including a light diffusing layer in direct contact with a wavelength conversion layer. *See, e.g.*, Ex. 1001, 3:21–32.

d. Claim 40

The new limitation in proposed substitute claim 40 recites “wherein the light diffusing layer is configured to increase the angular emission color uniformity of the light emitting device.” Motion App. A, A4. According to at least one portion of the ’678 patent specification cited as support for substitute claim 40, “remote phosphor devices are often subject to perceptible non-uniformity in color when viewed from different angles,” but “the addition of a light diffusing layer 44 in direct contact with the wavelength conversion layer 46 significantly increases the uniformity of color of emitted light with emission angle θ .” Ex. 1001, 12:13–22; *see also* Motion 9 (citing Ex. 1001, 12:13–14:3); Ex. 2027, 12–13 (“Moreover the inventors have further discovered that as well as providing a substantial saving in phosphor material usage, the addition of a light diffusing layer 44 in direct contact with the wavelength conversion layer 46 significantly increases the uniformity of color of emitted light with emission angle θ .”). According to the ’678 patent, a light diffusing layer in the micron-scale particle regime (e.g., an average particle size of about 5 μm) increases the uniformity of color of emitted light with emission angle θ . *See* Ex. 1001, 12:18–33; *see also* Ex. 2027, 13 (“All emission color measurements were measured at a distance of 10m from the lamp 10 for wavelength conversion components in which the light diffusing layer comprises light diffractive particles of TiO_2 with an average particle size $\approx 5\mu\text{m}$.”). Thus, the

new limitation in substitute claim 40 appears to be supported by the teachings in the '678 patent specification.

However, substitute claim 40 *as a whole* appears to contain a new matter for the following reason. Petitioner contends that “the disclosure of the '678 patent does not demonstrate that the alleged inventors were in possession of a nano-particle embodiment of the alleged invention at all, let alone one that would also achieve the alleged on-state benefits of the micro-particle embodiment.” Opp. 12–13. As Petitioner points out, original claim 19 (corresponding to substitute claim 40) was amended during prosecution to include “the light diffusing layer improves an OFF state white appearance of the wavelength conversion component.” Ex. 1004, 147; *see also* Opp. 12 (citing Ex. 1004, 145); Motion App. A, A4. According to the '678 patent specification, “[p]referably, to enhance the white appearance of the lighting device in an OFF state, the light diffractive material within the light diffusing layer 44 is a ‘nano-particle’ having an average particle size of less than about 150 nm.” Ex. 1001, 11:50–54. As noted above, Patent Owner’s Motion identifies written description support for only the new features added to proposed substitute claim 40, not the claim *as a whole*. *See* Motion 8–9. Accordingly, Patent Owner has not shown sufficient written description support for substitute claim 40 that recites both the original feature supported by the nano-particle embodiment (i.e., “the light diffusing layer improves an OFF state white appearance of the wavelength conversion component”) and the new feature supported by the micro-particle embodiment (i.e., “the light diffusing layer is configured to increase the angular emission color uniformity of the light emitting device”).

On this record, Patent Owner has not sufficiently identified adequate written description support for proposed substitute claim 40. *Lectrosonics*, Paper 15 at 7

(requiring Patent Owner to “set forth written description support in the originally filed disclosure of the subject patent for each proposed substitute claim, and also set forth support in an earlier filed disclosure for each claim for which benefit of the filing date of the earlier filed disclosure is sought”); *see* 37 C.F.R.

§§ 42.121(b)(1)–(2). Claims 41–44 also lack written description support by virtue of their dependency from claim 48.

e. Claim 45

The new limitation in proposed substitute claim 45 recites “wherein the light scattering material scatters excitation light from the one or more solid-state light emitters relatively more than the light scattering material scatters light generated by the at least one photoluminescence material.” Motion App. A, A6. According to at least one of the portions in the ’678 patent specification cited as support for substitute claim 45, “the scattering particles 152 within the diffusing layer 44 can be selected to be nano-particles having a relatively smaller average particle size that is selected such that the particles 152 will scatter excitation (typically blue) light relatively more than they will scatter light generated by the photoluminescence (phosphor) material(s).” Ex. 1001, 17:46–52; *see also* Motion 11 (citing Ex. 1001, 17:43–60); Ex. 2027, 16 (“In further embodiments it is envisioned to configure the light diffusing layer such that it selectively scatters blue light generated by the LEDs more than it scatters light generated by the phosphor material.”). At this stage, we consider the new limitation in substitute claim 45 to be supported by the teachings in the ’678 patent specification, as it would have been understood by one of ordinary skill in the art.

Petitioner argues that “the disclosure of the ’678 patent does not demonstrate that the alleged inventors were in possession of a nano-particle embodiment of the alleged invention at all, let alone one that would also achieve the alleged on-state

benefits of the micro-particle embodiment.” Opp. 12–13. Petitioner’s argument is misplaced with respect to substitute claim 45.

First, the ’678 patent explains that a light diffusing layer in the nano-scale particle regime (e.g., an average particle size of less than about 150 nm) scatters excitation light (e.g., blue light) more readily than light generated by the phosphor material, referring to plots of relative light scattering versus TiO_2 average particle size in nanometers for red, green, and blue light as support. *See* Ex. 1001, 11:37–12:12, FIG. 10. Patent Owner identifies this description in the ’678 patent as supporting the new limitation of proposed substitute claim 45. Motion 11 (citing Ex. 1001, 11:37–12:12). While Petitioner characterizes this description “as purely aspirational, lacking any working examples or experimental data to demonstrate its feasibility,” Petitioner provides no persuasive analysis explaining why the inventors were not in possession of the nano-particle embodiment at all, despite these supporting descriptions. Opp. 12 (citing Ex. 1001, 11:19–12:12, FIG. 10).

Moreover, unlike substitute claim 40 discussed above, both the new limitation and the original limitation of “wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component” in proposed substitute claim 45 are supported by the nano-particle embodiment of the ’678 patent. *See, e.g.*, Ex. 1001, 11:37–12:12 (“The light diffractive particle size can be selected such that the particles will scatter blue light relatively at least twice as much as they will scatter light generated by the phosphor material. . . .

Preferably, to enhance the white appearance of the lighting device in an OFF state, the light diffractive material within the light diffusing layer 44 is a ‘nano-particle’ having an average particle size of less than about 150 nm.”). Thus, Petitioner’s argument that the disclosure of the ’678 patent does not demonstrate the inventors were in possession of a nano-particle embodiment that would also achieve the

alleged on-state benefits of the micro-particle embodiment does not apply to substitute claim 45.

f. Claim 48

Proposed substitute claim 48 recites that “the final visible emission product comprises a luminous flux above 250 lumens.” Supp. Motion App. A, A1. The support cited for substitute claim 48 on page 6 of the Supplemental Motion does not call for a luminous flux above 250 lumens. Rather, the cited portions of the ’678 patent and ’411 provisional describe a solid-state light emitting device configured to generate warm white light with a luminous flux of approximately 1000 lumens and also a high CRI solid-state light emitting device configured to generate warm white light with a luminous flux of about 1100 lumens. *See* Ex. 1001, 6:55–61, 20:27–51; Ex. 2027, 9–10 (¶ 38), 18 (¶ 64); *see also* Ex. 1004, 115–116 (¶ 45), 77–78 (¶ 102). This does not provide sufficient written description support for the proposed new claim limitation of “a luminous flux above 250 lumens.” *Cf.* Opp. 11 (“Substitute claim 48 requires ‘a luminous flux above 250 lumens,’ which is an open-ended range with no upper limit. There is no disclosure enabling the full scope of such a claim.”).

On this record, Patent Owner does not appear to have sufficiently identified adequate written description support for proposed substitute claim 48. Claim 49 also lacks written description support by virtue of its dependency from claim 48.

B. Unpatentability Arguments by Petitioner

Petitioner bears the ultimate burden to show that any proposed substitute claims are unpatentable. 37 C.F.R. § 42.121(d)(2). For the reasons discussed

below, at this stage of the proceeding, and based on the current record,³ Petitioner has shown a reasonable likelihood that proposed substitute claims 30–49 are unpatentable. *See* 37 C.F.R. § 42.121(e)(1).

1. Indefiniteness

Petitioner contends proposed substitute claims 30–49 are unpatentable as indefinite. Opp. 2–9. The parties have submitted a comprehensive Memorandum Opinion and Order (Exhibit 1044, “*Markman* Order”), entered July 2, 2025, by District Judge Brantley Starr in the parallel litigation pending in the Northern District of Texas. We will refer to this *Markman* Order in our analysis that follows because it discusses several of the disputed claim terms before us. Overall, we find Judge Brantley’s decision to be well-reasoned and persuasive.

We observe also that Petitioner applies the wrong standard in its analysis of indefiniteness of the substitute claims in its Opposition. Citing *In re Packard*, 751 F.3d 1307 (Fed. Cir. 2014), Petitioner argues that “*Packard*, rather than *Nautilus*, defines the appropriate standard for assessing indefiniteness in IPRs.” Opp. 8–9. This is incorrect. A January 6, 2021, Memorandum from the Director of the USPTO⁴ establishes *Nautilus, Inc. v. Biosig Instruments*, 572 U.S. 898 (2014), not *Packard*, as the proper standard for assessing indefiniteness in AIA trials: “In summary, as a result of 2018 rule changes to align the Board’s approach to claim construction to that used by the district courts, the Board’s approach to analyzing

³ We express no view on the patentability of original claims 1–3, 6, 7, 9–14, 16–21, 25, 26, and 29 in this Preliminary Guidance. Instead, we focus on limitations added to those claims in the Patent Owner’s Motion to Amend and Supplemental Motion to Amend.

⁴ Available at <https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf>

indefiniteness in AIA post-grant proceedings will now adhere to the approach used by the district courts, as set forth in *Nautilus*.” *Id.* at 5.

- a. *“the light diffusing layer is configured such that a portion of excitation light generated by the light emitting device is directed back at the wavelength conversion layer” (all claims)*

Petitioner argues that “[t]his term is indefinite, because there is no meaningful metric for “portion.” Opp. 2–3. Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that this term causes the claims to be indefinite. The mere fact that a claim does not provide a metric for “a portion” does not render the claim indefinite. Likewise, the dictionary definition of “portion” as “an often limited part of a whole,” requires only that a portion be less than the whole, but not by a specific amount. *See Merriam-Webster Dictionary* at <https://www.merriamwebster.com/dictionary/portion>.

- b. *“reduces the wavelength conversion layer material necessary for a given color emission product” (claim 31)*

Petitioner argues that “[t]his new limitation in proposed claim 31 is relative, but the claim and specification fail to provide any guidance as to the baseline for comparison, or how to make such a comparison.” Opp. 3–4.

Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that the inclusion of this limitation causes the proposed substitute claim to be indefinite. The claim does not specify a metric; it calls for *any* reduction in the wavelength conversion layer necessary for a given color emission product. It is, therefore, clear at this stage that the baseline is the wavelength conversion layer material before the reduction, and that any reduction suffices.

c. “average particle size” (claims 42, 46–49)

Petitioner argues that “[p]roposed claims 42 and 46–49 are indefinite because they recite an ‘average particle size’ without specifying the method of measurement.” Opp. 4. Petitioner continues, “[i]n fields where different measurement techniques can yield materially different results, the failure to specify a technique renders a claim indefinite.” *Id.*

Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that these proposed substitute claims are indefinite for inclusion of this limitation. As stated in the *Markman* Order with respect to claim 21, which corresponds to proposed substitute claim 42 and also contains the “average particle size” limitation, “Claim 21 does not require any particular way of measuring average particle size.” *Markman* Order 13. The *Markman* Order concludes that the claim is not indefinite. *Id.* at 16. Proposed substitute claims 42 and 46–49 contain the same “average particle size” limitation. Motion App. A, A5; Supp. Motion App. A, A1–A2. We agree with and adopt the reasoning of the *Markman* Order, and for the reasons given, we are not persuaded this recitation makes proposed substitute claims 42 and 46–49 indefinite.

d. “scatters excitation light [relatively more/at least twice as much] as light generated by the at least one photoluminescence material” (claims 46–49)

Petitioner argues that “[t]hese limitations suffer from the same defect as ‘average particle size.’” Opp. 5. For the reasons discussed *supra* in connection with “average particle size,” and based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that these proposed substitute claims are indefinite for including this limitation.

e. “wherein the final visible emission product comprises a luminous flux above 250 lumens” (claims 48, 49)

Petitioner argues that “[t]his limitation renders proposed claims 48 and 49 indefinite because they are directed to a component, yet define its scope by a system-level property that the component itself does not control.” Opp. 5–6 (emphasis omitted). Petitioner continues, “[t]his demonstrates that a [person of ordinary skill] could not evaluate a standalone wavelength conversion component, as required by the claims.” *Id.* at 6. We are not persuaded by this argument.

In connection with its obviousness challenge to claim 48, Petitioner asserts that “achieving specific lumen outputs is a matter of standard engineering scaling, and the prior art explicitly discloses outputs far exceeding this arbitrary threshold.” Opp. 24. Petitioner asserts a reference (Harbers, Ex. 1056) “provides multiple working examples demonstrating that achieving well over 250 lumens was conventional.” *Id.* These assertions contradict Petitioner’s contention that a person of ordinary skill “could not evaluate a standalone wavelength conversion component.” *See supra.*

Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that the proposed substitute claims are indefinite for including this limitation.

f. “improves an off-state white appearance” (all claims)

The *Markman* Order reasons that “the claims plainly allow for any improvement of the off-state white appearance of the wavelength conversion component. That does not make the claims indefinite.” *Markman* Order 7. Petitioner responds that the District Court’s construction for this term “highlights the term’s subjectivity by relying on a hypothetical ‘observer’ and no baseline for comparison.” Opp. 7–8. Based on the record at this stage of the proceeding,

Petitioner has not shown a reasonable likelihood that the proposed substitute claims are indefinite for including this limitation. We agree with and adopt the reasoning of the *Markman* Order that “the claims . . . do not require quantification of the improvement.” *Markman* Order 7.

2. Lack of Written Description

Petitioner contends that “the proposed substitute claims improperly seek to broaden the claims to cover subject matter that the ’678 patent fails to show the inventors possessed at the time of filing.” Opp. 9. In this section, we address Petitioner’s arguments set forth in this regard on pages 9–13 of the Opposition. As noted below, most of these arguments overlap with and were already addressed above in connection with our discussion of new matter.

a. Non-Remote Phosphors

Petitioner contends that “[t]he proposed substitute claims are not limited by device architecture, yet the specification’s entire substantive technical disclosure is confined to so-called ‘remote’ phosphor systems.” Opp. 9 (citing Ex. 1001, 1:56–63). Petitioner argues that “[t]o satisfy the written description requirement for a claim covering both remote and non-remote phosphor systems, the specification must support both,” but “the ’678 [patent] discloses only remote phosphor systems and offers no structural features or principles that would allow a POSITA to achieve the claimed functional benefits (e.g., reduced phosphor material, improved uniformity) in the vast genus of remote and non-remote phosphor devices without undue experimentation.”⁵ *Id.* at 10.

⁵ To the extent Petitioner argues that the substitute claims are also unpatentable under 35 U.S.C. § 112 for failing to satisfy the enablement requirement, Petitioner’s argument is not persuasive because it provides no substantive analysis, such as a *Wands* analysis, to support its position. The *Wands* factors to determine

Petitioner's argument is not persuasive for the reasons discussed above in connection with the scope of amended claims and new matter. Petitioner does not explain why the proposed substitute claims require non-remote phosphors, in addition to remote phosphors. Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that the proposed substitute claims lack written description support for non-remote phosphors.

b. Functional Limitations

Petitioner asserts that “[c]ertain aspirational or functional limitations of the substitute claims are unsupported by the disclosure of the ’678 patent and claim new matter.” Opp. 11. More specifically, Petitioner contends that “[s]ubstitute claim 31 relates to an unclaimed embodiment where the phosphors and light scattering material are mixed in a single layer, and the ’678 patent only provides evidence for a reduction in phosphor in connection with such an embodiment.” *Id.* at 11. Petitioner argues that “[t]here is no disclosure providing written description support for reducing the amount of phosphor in a device with distinct ‘light diffusing’ and ‘wavelength conversion’ layers as also required by the claims.” *Id.*

Petitioner's argument is not persuasive for the reasons discussed above in connection with new matter. Petitioner's argument ignores the embodiments described in the ’678 patent specification, such as the Motion's citations of support for substitute claim 31 discussed above, that describe reducing the quantity of phosphor material required to generate a given color emission product by including

whether a disclosure requires undue experimentation are: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

a *light diffusing layer* in direct contact with a *wavelength conversion layer*. See, e.g., Ex. 1001, 3:21–32; see also Motion 7 (citing the same). Based on the record at this stage of the proceeding, Petitioner has not shown a reasonable likelihood that proposed substitute claim 31 lacks written description support for reducing the amount of phosphor in a device with distinct “light diffusing” and “wavelength conversion” layers.

Petitioner contends also that “the disclosure of the ’678 patent does not demonstrate that the alleged inventors were in possession of a nano-particle embodiment of the alleged invention at all, let alone one that would also achieve the alleged on-state benefits of the micro-particle embodiment.” Opp. 12–13. For the reasons discussed above in connection with new matter, Petitioner has shown a reasonable likelihood that substitute claims 40–44 lack written description support for both the original feature supported by the nano-particle embodiment (i.e., “the light diffusing layer improves an OFF state white appearance of the wavelength conversion component”) and the new feature supported by the micro-particle embodiment (i.e., “the light diffusing layer is configured to increase the angular emission color uniformity of the light emitting device”).

With respect to proposed substitute claim 45, on the other hand, for the reasons discussed above in connection with new matter, we determine that Petitioner has not shown a reasonable likelihood that substitute claim 45 lacks written description support for the features supported by the nano-particle embodiment (i.e., “wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component” and “wherein the light scattering material scatters excitation light from the one or more solid-state light emitters relatively more than the light scattering material scatters light generated by the at least one photoluminescence material”).

Petitioner also contends that “[s]ubstitute claim 48 requires ‘a luminous flux above 250 lumens,’ which is an open-ended range with no upper limit,” and “[t]here is no disclosure enabling the full scope of such a claim.” Opp. 11. For the reasons discussed above in connection with new matter, Petitioner has shown a reasonable likelihood that proposed substitute claim 48 lacks written description support for the claimed range of luminous flux above 250 lumens.⁶

c. 440 nm Limitation

Proposed substitute claims 30, 40, and 45 recite “blue light having a wavelength of greater than or equal to 440 nm” (“440 nm Limitation”). Motion App. A, A1, A4, A6. Petitioner argues that while the 440 nm Limitation “was introduced during prosecution to distinguish prior art references,” this “does not appear in the original specification” and “[a]dding a new numerical range during prosecution constitutes new matter if the original specification does not disclose the specific endpoints of that range.” Opp. 13 (citing Ex. 1004, 194; Ex. 1001, 7:14–26; *Indivior UK Ltd. v. Dr. Reddy’s Labs. S.A.*, 18 F.4th 1323, 1329 (Fed. Cir. 2021)).

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that all of the proposed substitute claims lack written description support for the 440 nm Limitation. As Petitioner points out, the ’678 patent specification discloses using a blue light emitting LED that is “operable to generate blue light 28 having a peak wavelength λ_1 in a wavelength range 400 nm to 480 nm (typically 450 nm to 470 nm).” Ex. 1001, 7:14–26; *see also* Opp. 13

⁶ On the other hand, to the extent Petitioner is arguing that substitute claim 48 is unpatentable under 35 U.S.C. § 112 for failing to satisfy the enablement requirement, Petitioner’s argument is not persuasive because Petitioner provides no substantive analysis, such as a *Wands* analysis, to support its position. *See In re Wands*, 858 F.2d at 737.

(citing the same). The '678 patent specification does not appear to call for blue light having a wavelength of greater than or equal to 440 nm generated by a light emitting device or a solid-state light emitter, as required by the proposed substitute claims, nor does it disclose that the claimed range of blue light wavelength of greater than or equal to 440 nanometers is critical. As noted above, Patent Owner's Motion identified written description support for only the new features added to the proposed substitute claims, and therefore did not identify written description support for the 440 nm Limitation in the original claim. *See* Motion 6 (claim 30[e]), 9 (claim 40[b][5]), 10 (claim 45[f]). While "it is not necessary that the limitations of a claim be set forth in haec verba or, presumably, in the case where numbers, not words, are at issue, in haec numera, . . . the specification must indicate with some clarity what the claim recites. In the case of a claimed range, a skilled artisan must be able to reasonably discern a disclosure of that range." *Indivior*, 18 F.4th at 1328 (citation omitted). We determine that the '678 patent's description of an LED generating blue light having a peak wavelength in a wavelength range 400 nm to 480 nm (typically 450 nm to 470 nm) does not provide sufficient written description support for the 440 nm Limitation.

3. Obviousness

Petitioner contends claims 30–32, 40, 45, 46, and 48 would have been obvious over various combinations of prior art. Opp. 14–25. Claims 30–32, 40, 45, 46, and 48 include limitations amended by Patent Owner's Motion and Supplemental Motion. For the reasons that follow, on this record Petitioner has shown a reasonable likelihood that proposed substitute claims 30–32, 40, 45, 46, and 48 are unpatentable as obvious.

- a. *“the light diffusing layer is configured such that a portion of excitation light generated by the light emitting device is directed back at the wavelength conversion layer” (claim 30)*

Petitioner contends “this new limitation, and claim 30 as a whole, are rendered obvious in view of Grounds 1 and 3 as presented in the IPR2024-01357 Petition.” Opp. 16. In other words, Petitioner contends that claim 30 would have been obvious over the combination of Basin-2007⁷ and Basin-2005⁸ (Ground 1), or over the combination of Krummacher,⁹ Shimizu,¹⁰ and Stokes¹¹ (Ground 3). *See* Paper 1, 18.

Petitioner contends that “[t]his limitation simply recites the well-known phenomenon of backscattering, a result flowing from the use of known diffusing materials,” and “Basin-2007 and Krummacher disclose adding TiO₂ scattering particles in a layer over a phosphor, and therefore render obvious this back-scattering effect.” Opp. 14–15 (citing Ex. 1005 ¶ 13, Fig. 2; Ex. 1007 ¶ 39; Ex. 2026 ¶ 53). At this stage, we agree with Petitioner’s contentions that the prior art of the original grounds teaches or suggests this limitation. For example, Basin-2007 discloses that “the TiO₂ particles scatter the light from the LED,” and “[i]f the percentage of the particles keeps increasing, the encapsulant becomes more and more like a diffusing reflector, reflecting most light back into the LED and out the sides.” Ex. 1005 ¶¶ 37, 46. Krummacher discloses “a light-scattering translucent layer” that “contains light-scattering particles” such as “particles of TiO₂,” “to bring about the light-scattering effect.” Ex. 1007 ¶¶ 6, 10. At this stage, we consider that the above-cited portions of Basin-2007 or Krummacher teach or

⁷ US Patent Publ’n No. 2009/0057699 A1 (pub. Mar. 5, 2009) (Ex. 1005).

⁸ US Patent Publ’n No. 2007/0045761 A1 (pub. Mar. 1, 2007) (Ex. 1006).

⁹ US Patent Publ’n No. 2008/0079015 A1 (pub. Apr. 3, 2008) (Ex. 1007).

¹⁰ US Patent No. 6,069,440 (issued May 30, 2000) (Ex. 1010).

¹¹ US Patent No. 6,791,259 B1 (issued Sept. 14, 2004) (Ex. 1008).

suggest that “the light diffusing layer is configured such that a portion of excitation light generated by the light emitting device is directed back at the wavelength conversion layer.”

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Basin-2007 and Basin-2005, or the combination of Krummacher, Shimizu, and Stokes, renders obvious proposed substitute claim 30.

- b. “wherein the portion of excitation light generated by the light emitting device and directed back at the wavelength conversion layer reduces the wavelength conversion layer material necessary for a given color emission product” (claim 31)*

Petitioner contends “this new limitation, and claim 31 as a whole, are also rendered obvious in view of Grounds 1 and 3 as presented in the IPR2024-01357 Petition.” Opp. 19. In other words, Petitioner contends that claim 31 would have been obvious over the combination of Basin-2007 and Basin-2005 (Ground 1), or over the combination of Krummacher, Shimizu, and Stokes (Ground 3). *See* Paper 1, 18.

Petitioner contends that “[t]his claimed benefit simply restates the consequence of the light-recycling function recited in claim 30,” and “[i]t was a fundamental principle of engineering understood by a POSITA that increasing the efficiency of a process allows for the use of less input material to achieve the same output.” Opp. 16 (citing Ex. 1065 ¶¶ 11–15). Specifically, Petitioner’s expert testified that it was “a well-known engineering trade-off that this increased conversion efficiency could be leveraged in one of two ways: either to increase the total light output for a given amount of phosphor, or to reduce the amount of phosphor material needed to achieve a target light output.” Ex. 1065 ¶ 14. Petitioner argues that “a proposed obviousness ground renders obvious a claim

limitation when the limitation is ‘the natural result’ of the obviousness ground.” Opp. 17 (quoting *Persion Pharms. LLC v. Alvogen Malta Operations Ltd.*, 945 F.3d 1184, 1191, (Fed. Cir. 2019)). Petitioner also contends that the benefits of light recycling to increase conversion efficiency and reducing phosphor material would have been known to persons of ordinary skill. *Id.* at 18–19 (citing Ex. 1057, 5:6–10, 5:14–15; Ex. 1058, 1–3). At this stage, we agree with Petitioner’s contentions that this claim “is rendered obvious based on the structure rendered obvious by” the original grounds. *Id.* at 17.

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Basin-2007 and Basin-2005, or the combination of Krummacher, Shimizu, and Stokes, renders obvious proposed substitute claim 31.

c. “the light diffusing layer has a uniform thickness” (claim 32)

Petitioner contends “this new limitation, and [the claim] as a whole, are also rendered obvious in view of Grounds 1 and 3 as presented in the IPR2024-01357 Petition.” Opp. 19. In other words, Petitioner contends that claim 32 would have been obvious over the combination of Basin-2007 and Basin-2005 (Ground 1), or over the combination of Krummacher, Shimizu, and Stokes (Ground 3). *See* Paper 1, 18.

Petitioner contends that “[t]his feature represents a conventional and explicitly taught design choice for manufacturing optical layers in LEDs” and “[t]he prior art discloses this feature and explains why it is advantageous.” Opp. 19. At this stage, we agree with Petitioner’s contentions that prior art of the original grounds teaches or suggests this limitation. Basin-2007 discloses a flash LED module using “a silicone encapsulant with about 5% by weight of TiO₂, where the encapsulant is formed to have a flat surface so as not to significantly

affect the shape of the LED emission (i.e., the encapsulant does not form a lens).”

Ex. 1005 ¶ 11. Krummacher discloses that “[t]he thickness of the light-scattering translucent layer is advantageously selected so that it has a sufficient light-scattering effect but absorption losses in the layer are quite low” and “is preferably 500µm or less.” Ex. 1007 ¶ 16; *see also id.* ¶ 42 (“The light-scattering translucent layer 6 can in particular be a layer of synthetic material” and “can for example be manufactured as a film by means of an extruder and then, for example, laminated or glued onto luminescence conversion layer 5.”), Fig. 2. At this stage, we consider that the above-cited portions of Basin-2007 or Krummacher at least suggest that “the light diffusing layer has a uniform thickness.”

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Basin-2007 and Basin-2005, or the combination of Krummacher, Shimizu, and Stokes, renders obvious proposed substitute claim 32.

d. “the light diffusing layer is configured to increase the angular emission color uniformity of the light emitting device” (claim 40)

Petitioner contends “this new limitation, and [the claim] as a whole, are also rendered obvious in view of Grounds 1–4 as presented in the IPR2024-01357 Petition.” Opp. 21. In other words, Petitioner contends that proposed claim 40 would have been obvious over the combination of: Basin-2007 and Basin-2005 (Ground 1); Hussell,¹² Basin-2007, and van Woudenberg¹³ (Ground 2); Krummacher, Shimizu, and Stokes (Ground 3); or Hussell, Krummacher, and van Woudenberg (Ground 4). *See* Paper 1, 18.

¹² US Patent Publ’n No. 2010/0124243 A1 (pub. May 20, 2010) (Ex. 1011).

¹³ Int’l Patent Publ’n No. WO 2008/044171 A2 (pub. Apr. 17, 2008) (Ex. 1020).

Petitioner contends that “[t]he prior art is replete with teachings that identify angular color non-uniformity as a key problem and the addition of scattering particles as the standard solution,” and “a POSITA would have understood that it was natural and predictable for a light diffusing layer to increase the angular emission color uniformity of a light emitting device.” Opp. 20. At this stage, we agree that at least Basin-2007 teaches or suggests this limitation because Basin-2007 discloses that “the addition of the TiO₂ greatly reduces (e.g., by two-thirds) the variation of color temperature over the entire 180 degree emission angle,” and “adding the TiO₂ to the encapsulant also improves the color temperature uniformity across the package.” Ex. 1005 ¶¶ 8, 9; *see also id.* ¶¶ 37, 40, Figs. 4, 5.

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Basin-2007 and Basin-2005, or the combination of Hussell, Basin-2007, van Woudenberg, renders obvious proposed substitute claim 40.

e. “wherein the light scattering material scatters excitation light...relatively more than...light generated by the at least one photoluminescence material.” (claim 45)

Petitioner contends “this new limitation, and claim 45 as a whole, are also rendered obvious in view of the Grounds 2 and 4 as presented in the IPR2024-01357 Petition, in further view of Stokes (i.e., essentially the same grounds presented in the IPR2025-00260 Petition for claim 11).” Opp. 22. In other words, Petitioner contends that claim 45 would have been obvious over the combination of Hussell, Basin-2007, van Woudenberg, and Stokes, or the combination of Hussell, Krummacher, van Woudenberg, and Stokes. *See* Paper 1, 18.

Petitioner contends that “the concept of selecting a particle size to maximize scattering of blue light to aid in conversion was known in the art” such as Stokes. Opp. 21–22. Stokes discloses radiation scattering particles having “a size such that

the particles preferentially scatter blue or UV LED light as compared to yellow, green, red or white light from the luminescent material.” Ex. 1008, 7:1–4; *see also* Opp. 22 (quoting Ex. 1008, 7:1–4). Referring to Figure 6 of Stokes illustrating the relationship between the particle diameter and the wavelength of the scattered light for TiO₂ particles, Stokes explains that “100 to 200 nm particles have at least a 50% greater scattering power for blue radiation (i.e., such as that emitted by a blue emitting LED) than green or red (or for that matter yellow) radiation (i.e., such as that emitted by the phosphor or dye).” Ex. 1008, 7:13–17. According to Stokes,

This particle size range is advantageous because it enhances the scattering of the radiation source radiation while it decreases the amount of scattering of the luminescent material radiation. Therefore, the lamp radiation output is rendered more uniform because a greater amount of radiation source radiation is scattered toward the luminescent material, while a lesser amount of the luminescent material radiation that is emitted downward toward the radiation source is scattered back toward the luminescent material.

Id. at 7:17–26. Petitioner further contends that “Basin-2007 and Krummacher both disclose TiO₂ nanoparticles” and “[a] POSITA would, accordingly, have been motivated to select a particle size that scatters more blue light than converted light.” Opp. 22; *see also* Ex. 1005 ¶ 32; Ex. 1007 ¶ 39. At this stage, we agree with Petitioner’s contentions that Basin-2007 or Krummacher, in combination with Stokes, teaches or suggests “wherein the light scattering material scatters excitation light from the one or more solid-state light emitters relatively more than the light scattering material scatters light generated by the at least one photoluminescence material” and a person of ordinary skill would have been motivated for such a combination.

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Hussell, Basin-2007, van

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Woudenberg, and Stokes, or the combination of Hussell, Krummacher, van Woudenberg, and Stokes, renders obvious proposed substitute claim 45.

f. “the wavelength conversion component comprises a three-dimensional elongated shape” (claim 46)

Petitioner contends “this new limitation, and claim 46 as a whole, are rendered obvious by the Grounds in IPR2025-00260 either with or without Hussell.” Opp. 24. In other words, Petitioner contends that claim 46 would have been obvious over the combination of Basin-2007, Basin-2005, Stokes either with or without Hussell, or the combination of Krummacher, Shimizu, Stokes either with or without Hussell. *See* IPR2025-00260, Paper 1, 20.

Petitioner contends that “the shape of a claimed device is a matter of choice which a POSITA would have found obvious absent persuasive evidence that the shape was significant.” Opp. 23 (citing *In re Dailey*, 357 F.2d 669 (C.C.P.A. 1966)). Petitioner also argues that, as already contended in the IPR2024-01357 Petition with respect to claim 17, “Basin-2007 discloses that ‘the silicone encapsulant may be molded into a lens to shape the light emission pattern,’ and dome-shaped light diffusing layers.” Opp. 23 (quoting Ex. 1005 ¶ 11; citing Ex. 1005 ¶ 40 (“The encapsulant formed an overmolded hemispherical lens over the LED.”)); *see also* Paper 1, 34.

In addition, Petitioner contends that “this limitation is directly taught by Hussell, which is entirely directed to ‘Elongated Hollow Wavelength Conversion Tubes’” for use in replacement bulbs.” Opp. 23 (quoting Ex. 1011, Title, Abstract). Petitioner argues that “Hussell itself provides the motivation for this combination, teaching that the inner and/or outer surfaces of its tube can be ‘textured’ because ‘[t]exturing may enhance scattering of light.’” *Id.* at 23 (quoting Ex. 1011 ¶ 48; citing *id.* ¶¶ 8, 36). According to Petitioner, “[a] POSITA,

thus taught by Hussell to enhance scattering, would have found it obvious to implement the well-known scattering layers of the prior art to achieve this express goal.” *Id.* at 23–24. At this stage, we agree with Petitioner’s contentions that the prior art of the original grounds in combination with Hussell teaches or suggests “the wavelength conversion component comprises a three-dimensional elongated shape,” and a person of ordinary skill would have combined Hussell’s teaching.

Based on the record at this stage of the proceeding, Petitioner has shown a reasonable likelihood that the combination of Basin-2007, Basin-2005, and Stokes with Hussell, or the combination of Krummacher, Shimizu, and Stokes with Hussell, renders obvious proposed substitute claim 46.

g. “wherein the final visible emission product comprises a luminous flux above 250 lumens” (claim 48)

Petitioner contends “this new limitation, and [the claim] as a whole, are rendered obvious by the Grounds in IPR2025-00260 either with or without Hussell.”¹⁴ Opp. 24–25; *see also* IPR2025-00260, Paper 1, 20.

Petitioner contends that “this wherein clause is nonlimiting because it is directed to an intended result of a structure that is positively recited.” Opp. 24. At this stage, we agree with Petitioner’s contentions that this wherein clause adds no patentable weight, and prior art of the original grounds teaches or suggests the limitations of substitute claim 48. The phrase “the final visible emission product comprises a luminous flux above 250 lumens” merely recites an intended result or use of the claimed wavelength conversion component. *Cf. Minton v. National Ass’n of Sec. Dealers, Inc.*, 336 F.3d 1373, 1381 (Fed. Cir. 2003) (“A whereby

¹⁴ Upon reviewing Petitioner’s substantive argument, we think that Petitioner may have intended to rely on Harbers (US Patent No. 8,104,908 B2 (Ex. 1056)) here, rather than Hussell. *See* Opp. 24–25 (discussing Harbers).

clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited.”); *Texas Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993) (“A ‘whereby’ clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim.”). To the extent this wherein clause is construed to recite an intended use of the claimed wavelength conversion component, the Federal Circuit has held that a statement of intended use in an apparatus claim cannot distinguish over a prior art apparatus that discloses all the recited limitations and is capable of performing the recited function. *See In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997) (“It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable.”).

Based on the record at this stage of the proceeding, it appears that Petitioner has shown a reasonable likelihood that the combination of Basin-2007, Basin-2005, and Stokes, or the combination of Krummacher, Shimizu, and Stokes, renders obvious proposed substitute claim 48.

III. CONCLUSION

Patent Owner has the option to reply to this Preliminary Guidance *or* to file a revised MTA by DUE DATE 3. 37 C.F.R. § 42.121(e)(3), (f); Paper 32. Patent Owner’s reply or revised MTA may only respond to this Preliminary Guidance or Petitioner’s Opposition and may be accompanied by new evidence (including declarations). 37 C.F.R. § 42.121(e)(3). Petitioner has the option to file a sur-reply responsive to this Preliminary Guidance, Patent Owner’s reply, or Patent Owner’s revised MTA, but may not present new evidence in any case. 37 C.F.R. § 42.121(e)(3). Petitioner may also file a reply to the preliminary guidance in the case Patent Owner does not file a reply or revised MTA. 37 C.F.R. § 42.121(e)(4).

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In addition, Patent Owner is reminded that amendments of the challenged claims may also be pursued in a separate reissue or reexamination proceeding before, during, or after an AIA trial proceeding, including subsequent to the issuance of the Final Written Decision. We draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

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