

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAVANT TECHNOLOGIES LLC d/b/a GE LIGHTING and
LEDVANCE LLC,
Petitioners,

v.

FEIT ELECTRIC COMPANY, INC.,
Patent Owner.

Case IPR2024-01357
U.S. Patent No. 8,604,678

SAVANT TECHNOLOGIES LLC d/b/a GE LIGHTING,
ELONG INTERNATIONAL USA INC., and
XIAMEN LONGSTAR LIGHTING CO. LTD.,
Petitioners,

v.

FEIT ELECTRIC COMPANY, INC.,
Patent Owner.

Case IPR2025-00260
U.S. Patent No. 8,604,678

PATENT OWNER'S REVISED CONTINGENT MOTION TO AMEND

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<i>Indivior UK Ltd. v. Dr. Reddy's Labs. S.A.</i> , 18 F.4th 1323 (Fed. Cir. 2021)	14
<i>KSR Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007)	18
<i>Lectrosonics, Inc. v. Zaxcom, Inc.</i> , IPR2018-01129, -01130, Paper 15 (P.T.A.B. Feb. 25, 2019)	4, 12, 18
<i>Rai Strategic Holdings, Inc. v. Philip Morris Prods. S.A.</i> , 92 F.4th 1085 (Fed. Cir. 2024)	15
<i>Upjohn Co. v. Mova Pharm. Corp.</i> , 225 F.3d 1306 (Fed. Cir. 2000)	17
<i>Xerox Corp. v. Bytemark, Inc.</i> , IPR2022-00624, Paper 9 (P.T.A.B. Aug. 24, 2022)	17

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37 C.F.R. § 42.121	2, 4, 5
37 C.F.R. § 42.65	17

PATENT OWNER’S EXHIBIT LIST

Exhibit	Description
2001	Declaration of E. Fred Schubert, Ph.D.
2002	<i>Curriculum vitae</i> for E. Fred Schubert, Ph.D.
2003	U.S. Patent Publication 2002/0180351 (“McNulty”)
2004	U.S. Patent Publication 2001/0000622 (“Reeh”)
2005	Scheduling Order (Dkt. 37), <i>Feit Electric Co., Inc. v. Elong International USA Inc.</i> , No. 3:24-cv-1089 (N.D. Tex.)
2006	June 2024 United States District Courts — Federal Court Management Statistics for N.D. Tex., E.D. Ky., and N.D. Ohio (https://www.uscourts.gov/statistics-reports/federal-courtmanagement-statistics-june-2024)
2007	Case Management Order (Dkt. 19), <i>Feit Electric Co., Inc. v. Savant Technologies LLC d/b/a GE Lighting</i> , No. 1:24-cv-473 (N.D. Ohio)
2008	Scheduling Order (Dkt. 33), <i>Feit Electric Co., Inc. v. Ledvance, LLC</i> , No. 5:24-cv-31 (E.D. Ky.)
2009	Savant’s Initial Invalidity and Unenforceability Contentions, <i>Feit Electric Co., Inc. v. Savant Technologies LLC d/b/a GE Lighting</i> , No. 1:24-cv-473 (N.D. Ohio), served on September 5, 2024
2010	Ledvance’s Initial Invalidity and Unenforceability Contentions, <i>Feit Electric Co., Inc. v. Ledvance, LLC</i> , No. 5:24-cv-31 (E.D. Ky.), served on September 24, 2024
2011	Elong’s Initial Invalidity and Unenforceability Contentions, <i>Feit Electric Co., Inc. v. Elong International USA Inc.</i> , No. 3:24-cv-1089 (N.D. Tex.), served on December 9, 2024
2012	Comparison of Petition and Expert Testimony Analysis
2013	Mike Krames, <i>Light-Emitting Diode Technology for Solid-State Lighting</i> , in <i>Frontiers of Engineering: Reports on Leading-Edge Engineering from the 2009 Symposium</i> , 67 (2009)
2014	E. Fred Schubert, <i>Light-Emitting Diodes</i> (2nd ed. 2006)
2015	Matthew G. Bevan & Bruce M. Romenesko, <i>Modern Electronic Packaging Technology</i> , 20 JOHNS HOPKINS APL TECH. DIGEST 22 (1999)
2016	X. A. Cao & S. D. Arthur, <i>High-power and reliable operation of vertical light-emitting diodes on bulk GaN</i> , 85 Applied Physics Letters 3971 (2004).

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Exhibit	Description
2017	Michael R. Krames et al., <i>Status and Future of High-Power Light-Emitting Diodes for Solid-State Lighting</i> , 3 J. Display Tech. 160 (2007)
2018	Mehmet Arik et al., <i>Thermal Management of LEDs: Package to System</i> , 5187 Proc. SPIE 64 (2004)
2019	U.S. Dep’t Energy, <i>Critical Materials Strategy</i> (Dec. 2010)
2020	Zongyuan Liu et al., <i>Measurement and numerical studies of optical properties of YAG:Ce phosphor for white light-emitting diode packaging</i> , 49 Applied Optics 247 (2010)
2021	March 2024 United States District Courts — Federal Court Management Statistics for N.D. Tex., E.D. Ky., and N.D. Ohio (https://www.uscourts.gov/data-news/reports/statisticalreports/federal-court-management-statistics/federal-courtmanagement-statistics-march-2024)
2022	September 2024 United States District Courts — Federal Court Management Statistics for N.D. Tex., E.D. Ky., and N.D. Ohio (https://www.uscourts.gov/data-news/reports/statisticalreports/federal-court-management-statistics/federal-courtmanagement-statistics-september-2024)
2023	Declaration of William A. Doolittle, Ph.D., dated November 6, 2024, <i>Feit Electric Company, Inc. v. Savant Technologies, d/b/a GE Lighting</i> , Case No. 24-cv-00473
2024	Rebuttal Declaration of William A. Doolittle, Ph.D., dated November 20, 2024, <i>Feit Electric Company, Inc. v. Savant Technologies, d/b/a GE Lighting</i> , Case No. 24-cv-00473
2025	Deposition Transcript of William A. Doolittle, Ph.D., dated June 10, 2025
2026	Declaration of E. Fred Schubert, Ph.D., dated June 25, 2025
2027	U.S. Provisional App. No. 61/427,411, filed on December 21, 2010
2028	U.S. Provisional App. No. 61/390,091, filed on October 5, 2010
2029	Home Depot - Feit Electric White Filament LED Light Bulbs listing
2030	Candle Power Forums article: Feit LED filament bulb with white filaments
2031	The Home Depot Announces 2024 Innovation Award Winners

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Exhibit	Description
2032	Feit Electric Lighting Instagram consumer comments regarding filaments
2033	Feit Electric Lighting Instagram consumer comments regarding yellow filaments
2034	Feit Electric Lighting Instagram consumer comments: Regular Yellow Filament vs. White Filament
2035	Home Depot White Filament price point of \$29.97
2036	Home Depot Yellow Filament price point of \$21.97
2037	Reddit: Do white filament LED edison bulbs exist?
2038	Deposition Transcript of William A. Doolittle, Ph.D., dated July 17, 2025
2039	Declaration of E. Fred Schubert, Ph.D., dated July 25, 2025

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I. INTRODUCTION

Patent Owner Feit Electric Company, Inc. (“Feit Electric”) submits this Revised Contingent Motion to Amend claims 1-3, 6, 7, 9, 10-14, 16-21, 25, 26, and 29 of U.S. Patent No. 8,604,678 (the “’678 patent”). In the event any of those claims are found to be unpatentable, Feit Electric respectfully requests amendment of such claims.

On June 23, 2025, the Board instituted IPR2025-00260 and consolidated the proceeding with IPR2024-01357 (which challenges claims 1-3, 6, 7, 9, 10, 16-21, 25, 26, and 29 of the ’678 patent). Paper 25. Patent Owner submitted a contingent motion to amend claims 1-3, 6, 7, 9, 10, 16-21, 25, 26, and 29 based on the grounds presented in IPR2024-01357 on June 25, 2025 (Paper 27) and a contingent motion to amend claims 11-14 based on the grounds presented in IPR2025-00260 on July 25, 2025 (Paper 35). Petitioners filed an opposition to both motions on October 3, 2025 (Paper 41, hereinafter “Opp.”) and the Board issued Preliminary Guidance on October 24, 2025 (IPR2024-01357, Paper 42; IPR2025-00260, Paper 20, hereinafter “Board’s Guidance”). This Revised Motion to Amend takes into consideration Petitioners’ Opposition and the Board’s Guidance and replaces the currently pending Contingent Motions to Amend (Papers 27 and 35).

II. STATEMENT OF REQUESTED RELIEF

To the extent the Board finds any of original claims 1-3, 6, 7, 9, 10-14, 16-21, 25, 26, and 29 (the “challenged claims”) unpatentable in this proceeding, Feit Electric requests that the Board consider this Revised Contingent Motion and grant entry of the corresponding substitute claims. The substitute claims are proposed on a contingent basis and should only be entered as to any corresponding original claims found to be unpatentable. The proposed amendments are detailed in the claim listing at Appendix A (*see* 37 C.F.R. § 42.121(b)), and a table of the proposed amendments is shown below:

Original '678 Patent Claim	Contingent Substitute Claim
1	30
2	31
3	32
6	33
7	34
9	35
10	36
11	46
12	47
13	48

Original '678 Patent Claim	Contingent Substitute Claim
14	49
16	37
17	38
18	39
19	40
20	41
21	42
25	43
26	44
29	45

A description of the changes to Patent Owner's proposed substitute claims, as compared with those in Patent Owner's original Contingent Motions to Amend the Claims (Papers 27 and 35) can be found in Section III.E.1.

III. THE SUBSTITUTE CLAIMS MEET ALL STATUTORY AND REGULATORY REQUIREMENTS OF 35 U.S.C. § 316 AND 37 C.F.R. § 42.121

As explained below, the proposed contingent amendments meet the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R.

§ 42.121.

**A. Patent Owner Submits a Reasonable Number of Substitute Claims
(35 U.S.C. § 316(d)(1)(B) and 37 C.F.R. § 42.121(a)(3))**

Feit Electric proposes one contingent substitute claim for each challenged claim. Because Feit Electric proposes no more than one substitute claim for each original challenged claim, this is a reasonable number. *See Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, -01130, Paper 15 at 4-5 (P.T.A.B. Feb. 25, 2019) (“There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.”); 37 C.F.R. § 42.121(a)(3); *see also* 35 U.S.C. § 316(d)(1)(B); Board’s Guidance at 4-5.

**B. The Amendments are Responsive to the Grounds of Unpatentability
(37 C.F.R. § 42.121(a)(2)(i))**

The substitute claims are responsive to one or more grounds of unpatentability at issue in this proceeding because Petitioner has asserted that the prior art discloses the elements of the challenged claims (*see* IPR2024-01357 Pet.

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at 1; IPR2025-00260 Pet. at 1), which this Motion seeks to amend. The proposed substitute claims narrow the challenged claims by incorporating additional limitations that are not disclosed in the prior art. *See also* Board's Guidance at 5.

**C. The Substitute Claims Have Written Description Support and Do Not Introduce New Matter
(35 U.S.C. § 316(d)(3) and 37 C.F.R. §§ 42.121(a)(2)(ii) and 42.121(b))**

The originally filed disclosure of the '678 patent supports each proposed substitute claim. *See* 37 C.F.R. § 42.121(b)(1)-(2). The '678 patent issued from U.S. App. No. 13/273,212, filed on October 13, 2011 (Exhibit 1004, 6-88), 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 (Exhibit 2027) and U.S. Provisional App. No. 61/390,091, filed on October 5, 2010 (Exhibit 2028). Supporting citations for the substitute claims are provided below.

Claim Element	Support in U.S. App. No. 13/273,212
30[a] A wavelength conversion component for a light emitting device comprising: a wavelength conversion layer comprising particles of at least one photoluminescence material; and	¶¶ 10, 12, 19, 43, 49, 50, 62, 77, 88, 97, 112; FIGs. 2, 3; Cls. 1, 19, 27, 28, 29

Claim Element	Support in U.S. App. No. 13/273,212
30[b] a light diffusing layer comprising particles of a light scattering material,	¶¶ 10, 11, 12, 14-17, 43, 50, 52, 63, 65-66, 74, 78, 87, 96, 97, 107, 112, 130; FIGs. 2; Cls. 1, 19, 27, 28, 29
30[c] wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component;	¶¶ 11, 43, 63, 64, 65, 96, 100, 107, 112, 115, 122, 125, 126; Cl. 21
30[d] <u>wherein 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;</u>	¶¶ 11, 14, 60, 76, 86, 87, 97, 107, 112; FIG. 14
30[e] wherein the wavelength conversion component is configured such that in operation a portion of excitation light comprising blue light having a wavelength of <u>between 450 nm and 470 nm</u> generated by the light emitting device is emitted through the wavelength conversion component to contribute to a final visible emission product;	¶¶ 10, 47, 60, 66, 78, 86; FIGs. 2, 3, 14, 17, 18, 19
30[f] <u>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.</u>	¶¶ 11, 43, 60, 74, 75, 76, 86, 87, 95, 97, 100, 107, 112; FIG. 14
31[a] The component of claim <u>30</u> , wherein the wavelength conversion layer and the light diffusing layer are in direct contact with each other, <u>and</u>	¶¶ 10, 11, 54, 59, 68; FIGs. 2, 3; Cl. 2

Claim Element	Support in U.S. App. No. 13/273,212
31[b] <u>wherein the wavelength conversion layer material necessary for a given color emission product is reduced by between 20% and 40%.</u>	¶¶ 11, 43, 60, 74, 75, 76, 86, 87, 95, 97, 100, 107, 112
32 The component of claim 30, wherein the wavelength conversion layer comprises a mixture of the at least one phosphor material and a light transmissive binder and the light diffusing layer comprises a mixture of the light scattering material and the light transmissive binder.	¶¶ 12, 13, 52, 53, 54, 55, 56, 68; FIGs. 4; Cl. 3
33 The component of claim 32, wherein the light transmissive binder comprises a curable liquid polymer selected from the group consisting of: a polymer resin, a monomer resin, an acrylic, an epoxy, a silicone and a fluorinated polymer.	¶¶ 12, 53; Cl. 6
34 The component of claim 32, wherein the weight loading of light scattering material to binder selected from the group consisting of: 7% to 35% and 10% to 20%.	¶¶ 53, 68, 70, 71, 72, 73; FIGs. 4, 5, 6, 7, 8; Cls. 7, 23
35 The component of claim 30, wherein the wavelength conversion and light diffusing layers are deposited using a method selected from the group consisting of: screen printing, slot die coating, spin coating, roller coating, drawdown coating and doctor blading.	¶¶ 13, 53, 54, 55, 81; Cl. 9
36 The component of claim 30, wherein the light scattering material is selected from the group consisting of: titanium dioxide, barium sulfate, magnesium oxide, silicon dioxide and aluminum oxide.	¶¶ 13, 52, 84; Cl. 10

Claim Element	Support in U.S. App. No. 13/273,212
37 The component of claim <u>30</u> in which the wavelength conversion layer and the light diffusing layer comprises planar shapes.	¶¶ 111, 123; FIGs. 2, 3, 20A, 20B, 20C; Cls. 16, 25
38 The component of claim <u>30</u> in which the light diffusing layer comprises a dome or elongated dome shape.	¶¶ 97, 99, 100, 111; FIGs. 16, 17, 18, 19, 21A, 21B, 21C, 23A, 23B; Cls. 17, 26
39 The component of claim <u>38</u> in which the wavelength conversion layer fills a volume formed beneath the dome or elongated dome shapes.	¶¶ 36, 37, 99, 100; FIGs. 18, 19; Cl. 18
40[a] A light emitting device, comprising: at least one solid-state light emitter operable to generate excitation light; and	¶¶ 10, 12, 16, 43, 45, 102; FIGs. 1, 9, 16, 18, 19, 23A, 23B; Cls. 19, 27, 28, 29
40[b][1] a wavelength conversion component comprising: a wavelength conversion layer excitable by the excitation light, wherein the wavelength conversion layer comprises particles of at least one photoluminescence material; and	¶¶ 10, 12, 19, 43, 49, 50, 62, 77, 88, 97, 112; FIGs. 2, 3; Cls. 19, 27, 28, 29
40[b][2] a light diffusing layer comprising particles of a light scattering material,	¶¶ 10, 11, 12, 14, 15, 16, 43, 50, 52, 63, 64, 65, 66, 68, 74, 78, 87, 96, 97, 107, 112, 130; FIGs. 2; Cls. 19, 27, 28, 29
40[b][3] wherein the light diffusing layer improves an OFF state white appearance of the wavelength conversion component;	¶¶ 11, 43, 63, 64, 65, 96, 100, 107, 112, 115, 122, 125, 126; Cl. 21

Claim Element	Support in U.S. App. No. 13/273,212
40[b][4] wherein the wavelength conversion component is configured such that in operation a portion of light comprising blue light having a wavelength of <u>between 450 nm and 470 nm</u> generated by the at least one solid-state light emitter is emitted through the wavelength conversion component to contribute to a final visible emission product;	¶¶ 10, 47, 60, 66, 78, 86; FIGs. 2, 3, 14, 17, 18, 19
40[b][5] <u>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.</u>	¶¶ 14, 16, 65, 66, 88; FIG. 10; Cl. 11
41 The device of claim <u>40</u> , wherein the light emitting device is selected from the group consisting of: downlights, light bulbs, linear lamps, lanterns, wall lamps, pendant lamps, chandeliers, recessed lights, track lights, accent lights, stage lighting, movie lighting, street lights, flood lights, beacon lights, security lights, traffic lights, headlamps, taillights, and signs.	¶¶ 89, 90, 103, 117, 124, 129; Cl. 20
42 The device of claim <u>40</u> in which the light scattering material within the light diffusing layer corresponds to an average particle size that improves the OFF state white appearance of the wavelength conversion component.	¶¶ 64, 65, 66, 130; FIGs. 10; Cl. 21
43 The device of claim <u>40</u> in which the wavelength conversion layer and the light diffusing layer comprises planar shapes.	¶¶ 111, 123; FIGs. 2, 3, 20A, 20B, 20C; Cls. 16, 25

Claim Element	Support in U.S. App. No. 13/273,212
44 The device of claim <u>40</u> in which the light diffusing layer comprises a dome or elongated dome shape.	¶¶ 97, 99, 100, 111; FIGs. 16, 17, 18, 19, 21A, 21B, 21C, 23A, 23B; Cls. 17, 26
45[a] A light bulb comprising: a connector base configured to be inserted in a socket to form an electrical connection for the light bulb;	¶¶ 88, 90, 128, 129; FIGs. 12A, 12B, 15, 16; Cl. 29
45[b] a body comprising one or more solid-state light emitters;	¶¶ 93; FIG. 16; Cl. 29
45[c] a wavelength conversion component having a three dimensional shape that is configured to enclose the one or more solid-state light emitters and to in part at least define a light mixing chamber,	¶¶ 93, 128; FIGs. 15, 16; Cls. 27, 28, 29
45[d] wherein the wavelength conversion component comprises a wavelength conversion layer comprising particles of at least one photoluminescence material and a light diffusing layer comprising particles of a light scattering material,	¶¶ 10, 11, 12, 14, 15, 16, 43, 49, 50, 52, 62, 63, 65, 66, 68, 74, 77, 78, 87, 88, 96, 97, 107, 112, 130; FIGs. 2, 3; Cls. 27, 28, 29
45[e] wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component;	¶¶ 11, 43, 63, 64, 65, 96, 100, 107, 112, 115, 122, 125, 126; Cl. 21

Claim Element	Support in U.S. App. No. 13/273,212
45[f] wherein the wavelength conversion component is configured such that in operation a portion of light comprising blue light having a wavelength of <u>between 450 nm and 470 nm</u> generated by the one or more solid-state light emitters is emitted through the wavelength conversion component to contribute to a final visible emission product;	¶¶ 10, 47, 60, 66, 78, 86; FIGs. 2, 3, 14, 17, 18, 19
45[g] <u>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.</u>	¶¶ 14, 16, 65, 66, 88; FIG. 10; Cl. 11
46 The component of claim <u>30</u> , wherein the light scattering material has an average particle size that is selected such that the light scattering material will scatter the excitation light relatively more than the light scattering material will scatter light generated by the at least one photoluminescence material.	¶¶ 14, 16, 65, 66, 76, 86, 88; FIGs. 10; Cl. 11
47 The component of claim <u>46</u> , wherein the light scattering material scatters the excitation light at least twice as much as light generated by the at least one photoluminescence material.	¶¶ 14, 65, 66; FIGs. 10; Cl. 12
48 The component of claim <u>46</u> , wherein the excitation light comprises blue light.	¶¶ 10, 14, 43, 66, 76, 88; Cl. 13
49 The component of claim <u>48</u> , wherein the light scattering material has an average particle size that is less than about 150 nm.	¶¶ 14, 53, 65, 66, 88; Cl. 14

**D. The Amendments Do Not Enlarge the Scope of the Claims
(35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii))**

The proposed amended claims do not broaden the claim scope. Every limitation of each original claim is present in the corresponding proposed substitute claim. These amendments are non-broadening because they add novel and nonobvious features that further distinguish over the prior art underlying the grounds advanced in this proceeding. *See Lectrosonics*, Paper 15 at 7. Furthermore, because the substitute independent claim is narrower than the original independent claim, the dependent claims are necessarily narrower than the corresponding original dependent claims. *See also* Board’s Guidance at 5-7.

E. Patentability of Substitute Claims and Response to the Board’s Guidance

“A Patent Owner does not bear the burden of persuasion to demonstrate the patentability of substitute claims presented in a motion to amend.” *Lectrosonics*, Paper 15 at 4. Rather, “the burden of persuasion ordinarily will lie with the petitioner to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.” *Id.* Here, the additional claim elements of proposed amended claims 30-49 are not taught by the prior art combinations cited by Petitioners in their Opposition.

1. Overview of Updates to Substitute Claims

In order to simplify and streamline issues for the Board, Patent Owner makes the following updates to the substitute claims, as compared with those in its original Contingent Motions to Amend the Claims (Papers 27 and 35):

Claims 30, 40, 45: Replaced limitation reciting “a wavelength of greater than or equal to 440 nm” with “a wavelength of between 450 nm and 470 nm”;

Claim 30: Added the limitation “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: Added the limitation “wherein the wavelength conversion layer material necessary for a given color emission product is reduced by between 20% and 40%”;

Claim 32: Removed “uniform thickness” limitation;

Claim 40: Removed “angular emission color uniformity” limitation and added “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”;

Claim 46: Removed “three-dimensional elongated shape” limitation;

Claim 48: Removed “luminous flux” limitation.

2. “blue light having a wavelength of greater than or equal to 440 nm” (claims 30, 40, and 45)

Patent Owner respectfully disagrees that there is insufficient written description support for the claim limitation “blue light having a wavelength of greater than or equal to 440 nm,” as recited in the first set of substitute claims 30, 40, and 45. *See* Board’s Guidance at 23-24. It is undisputed that 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).” EX1001 at 7:14-26; Opp. at 13; Board’s Guidance at 23. As the Board noted in its Guidance, “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.” Board’s Guidance at 24 (citing *Indivior UK Ltd. v. Dr. Reddy’s Labs. S.A.*, 18 F.4th 1323, 1328 (Fed. Cir. 2021)). Indeed, the cited portion of the specification (along with the additional support identified in Section III.C) provides adequate support for the claimed limitation.

The “440 nm” limitation must not be read out of the context of the surrounding claim language. The claim language does not merely recite “a wavelength of greater than or equal to 440 nm”; it recites “*blue light* having a

wavelength of greater than or equal to 440 nm.” This limitation is important because it provides the upper bound. As explained by Dr. Schubert, blue light may have different meanings to a POSITA, depending on the application. EX2026, ¶¶ 43-45. However, blue light has a limited wavelength range, and in the context of the ’678 Patent, one of skill in the art would understand that range to be approximately 480 nm at the upper bound. EX2026, ¶ 45. Thus, the claimed range of 440 nm to approximately 480 nm falls squarely within the scope of the range disclosed in the specification (*i.e.*, 400 nm to 480 nm). EX1001 at 7:14-26; *see Rai Strategic Holdings, Inc. v. Philip Morris Prods. S.A.*, 92 F.4th 1085, 1090 (Fed. Cir. 2024) (“In addition to considering what the specification expressly discloses, we also consider the context of the technology at issue and the knowledge gained by a person of ordinary skill in the art reading the specification.”).

Nevertheless, for simplicity and to streamline the issues for the Board, solely for the purposes of this Contingent Motion, Patent Owner has revised the substitute claims herein to recite “blue light having a wavelength of between 450 nm and 470 nm.” It is undisputed that this revised claim language is supported by the original specification. *See* Opp. at 13; Board’s Guidance at 23.

3. **“wherein the portion of excitation light generated by the light emitting device and directed back at the wavelength conversion layer reduced the wavelength conversion layer**

**material necessary for a given color emission product”
(claim 30) “by between 20% and 40%” (claim 31)**

Petitioners’ analysis of the “[reduction in] wavelength conversion layer material necessary for a given color emission product” limitation rests solely on conclusory expert testimony and impermissible hindsight bias. Petitioner first claims that the Tong reference (EX1060) teaches directing excitation light back at the phosphor in order to reduce the wavelength conversion layer material, but Petitioners identify only that Tong’s disclosure “can lead to increased amounts of downconversion and thus a shift in color temperature.” Opp. at 16 (quoting EX1060 at 20:58-62). A shift in color temperature is not the same as a reduction in the wavelength conversion material necessary for a given color emission product.

Beyond the Tong disclosure, Petitioners generally state, without support, that this advancement amounts to merely increasing the efficiency of a process, which would be understood by a POSITA. Opp. at 16. Not only does this general statement not disclose the claimed reduction in wavelength conversion layer material, but the sole support for this proposition rests with Petitioners’ expert, Professor Doolittle. *See* Opp. at 16 (citing EX1065, ¶¶ 11-15). Closer inspection of Professor Doolittle’s declaration shows that his support is conclusory at best. *See* EX1065, ¶¶ 11-15. Professor Doolittle cites to no reference materials and does not explain the reasoning behind his conclusion that these concepts were allegedly

known to a POSITA. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 (P.T.A.B. Aug. 24, 2022) (precedential) (finding that expert testimony that “does not cite to any additional supporting evidence or provide any technical reasoning [is] conclusory and unsupported [and] is entitled to little weight.”); *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *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.”).

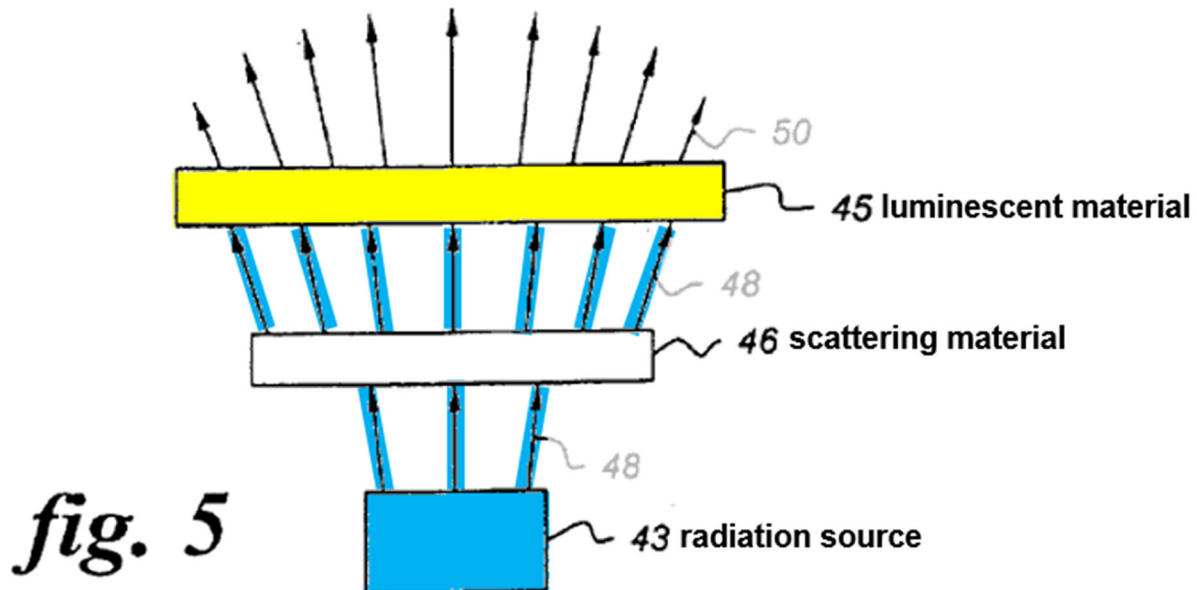
Furthermore, Professor Doolittle and Petitioners’ only citation is to the ’678 patent itself. *See* Opp at 16 (citing EX1001 at 3:21-32); EX1065, ¶ 15 (citing EX1001 specification). This is the very definition of hindsight bias. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 36 (1966) (warning against a “temptation to read into the prior art the teachings of the invention in issue” and instructing courts to “guard against slipping into use of hindsight”))). Accordingly, upon scrutiny, Petitioners

have not met their burden of persuasion with respect to this claim element. *See Lectrosonics*, Paper 15 at 4.

4. “wherein the light scattering material scatters excitation light...relatively more than...light generated by the at least one photoluminescence material” (claims 40 and 45)

In their challenge to the added limitation of “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,” Petitioners rely solely on Stokes (EX1008), in combination with either Basin-2007 (EX1005) or Krummacher (EX1007). Even if Stokes disclosed this limitation, it cannot be combined with either of these primary references. Indeed, for the numerous reasons stated in Patent Owner’s Response to IPR2025-00260 (Paper 34), Stokes expressly *teaches away* from the principles of Basin-2007 and Krummacher. *See* Paper 34 at 24-33.

Stokes describes a lamp containing a radiation source (*e.g.*, a blue LED chip), a luminescent material (*e.g.*, a phosphor) and—notably different from both the ’678 Patent and the other asserted prior art—a radiation scattering material located *between* the radiation source and the luminescent material, as illustrated in Figure 5.



EX1008 at Abst., FIG. 5; EX2039 at ¶ 16; *see* EX2039 at ¶ 13.

One of skill in the art could not have combined Stokes with any of the other cited references in order to arrive at the '678 Patent claims because Stokes teaches positioning the phosphor on the *exterior* of the filament. *See* EX1008 at FIG. 5; EX2039 at ¶¶ 16, 19; EX2038 at 43:3-5. In other words, an observer looking at the Stokes filament would see the phosphor layer on the outside—which is exactly what the '678 Patent sought to avoid. EX2039 at ¶ 19; EX2038 at 41:9-12, 43:3-5. The '678 Patent makes clear that the yellowish appearance of an off-state phosphor “may be undesirable to the potential purchaser or customer that is seeking a white-appearing light” (EX1001 at 11:17-18), explaining that there is “a need for an improved approach to implement LED lighting apparatuses which . . . addresses the non-white color appearance of the LED lighting apparatuses while in an OFF

state” (EX1001 at 2:47-51). Placing the phosphor on the outside of the LED filament would eviscerate one of the stated purposes of the ’678 Patent and would fail to “improve an off-state white appearance of the wavelength conversion component,” as *all* claims of the ’678 Patent require. An observer would not see an improved off-state white appearance. Instead, an observer would see the same undesirable phosphor color that the ’678 Patent criticized in the prior art embodiments and sought to avoid with the claimed limitation. *See* EX1001 at 11:17-18, 2:47-51; EX2039 at ¶ 19; EX2038 at 43:3-5. Petitioners have not reconciled this fundamental incompatibility with the stated purpose of the ’678 Patent.

IV. CONCLUSION

For the reasons set forth herein, Patent Owner asserts that the proposed amended claims meet all statutory requirements and respectfully requests that the Board allow proposed amended claims 30-49 in the event that it finds any of the corresponding original claims to be unpatentable.

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Respectfully submitted,

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APPENDIX A

Proposed Amended Claim 30 (Substitute for Original Claim 1)

30. A wavelength conversion component for a light emitting device comprising:

a wavelength conversion layer comprising particles of at least one photoluminescence material; and

a light diffusing layer comprising particles of a light scattering material, wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component;

wherein 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;

wherein the wavelength conversion component is configured such that in operation a portion of excitation light comprising blue light having a wavelength of ~~greater than or equal to 440 nm~~between 450 nm and 470 nm generated by the light emitting device is emitted through the wavelength conversion component to contribute to a final visible emission product;

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.

Proposed Amended Claim 31 (Substitute for Original Claim 2)

31. The component of claim [[1]]30, wherein the wavelength conversion layer and the light diffusing layer are in direct contact with each other, and wherein the wavelength conversion layer material necessary for a given color emission product is reduced by between 20% and 40%.

Proposed Amended Claim 32 (Substitute for Original Claim 3)

32. The component of claim [[1]]30, wherein the wavelength conversion layer comprises a mixture of the at least one phosphor material and a light transmissive binder and the light diffusing layer comprises a mixture of the light scattering material and the light transmissive binder.

Proposed Amended Claim 33 (Substitute for Original Claim 6)

33. The component of claim [[3]]32, wherein the light transmissive binder comprises a curable liquid polymer selected from the group consisting of: a polymer resin, a monomer resin, an acrylic, an epoxy, a silicone and a fluorinated polymer.

Proposed Amended Claim 34 (Substitute for Original Claim 7)

34. The component of claim [[3]]32, wherein the weight loading of light scattering material to binder selected from the group consisting of: 7% to 35% and 10% to 20%.

Proposed Amended Claim 35 (Substitute for Original Claim 9)

35. The component of claim ~~[[1]]~~30, wherein the wavelength conversion and light diffusing layers are deposited using a method selected from the group consisting of: screen printing, slot die coating, spin coating, roller coating, drawdown coating and doctor blading.

Proposed Amended Claim 36 (Substitute for Original Claim 10)

36. The component of claim ~~[[1]]~~30, wherein the light scattering material is selected from the group consisting of: titanium dioxide, barium sulfate, magnesium oxide, silicon dioxide and aluminum oxide.

Proposed Amended Claim 37 (Substitute for Original Claim 16)

37. The component of claim ~~[[1]]~~30 in which the wavelength conversion layer and the light diffusing layer comprises planar shapes.

Proposed Amended Claim 38 (Substitute for Original Claim 17)

38. The component of claim ~~[[1]]~~30 in which the light diffusing layer comprises a dome or elongated dome shape.

Proposed Amended Claim 39 (Substitute for Original Claim 18)

39. The component of claim [[17]]38 in which the wavelength conversion layer fills a volume formed beneath the dome or elongated dome shapes.

Proposed Amended Claim 40 (Substitute for Original Claim 19)

40. A light emitting device, comprising:
at least one solid-state light emitter operable to generate excitation light; and
a wavelength conversion component comprising:
a wavelength conversion layer excitable by the excitation light, wherein the wavelength conversion layer comprises particles of at least one photoluminescence material; and
a light diffusing layer comprising particles of a light scattering material,
wherein the light diffusing layer improves an OFF state white appearance of the wavelength conversion component;
wherein the wavelength conversion component is configured such that in operation a portion of light comprising blue light having a wavelength of ~~greater than or equal to 440 nm~~between 450 nm and 470 nm generated by the at least one solid-state light emitter is emitted through the wavelength conversion component to contribute to a final visible emission product;
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.

Proposed Amended Claim 41 (Substitute for Original Claim 20)

41. The device of claim ~~[[19]]~~40, wherein the light emitting device is selected from the group consisting of: downlights, light bulbs, linear lamps, lanterns, wall lamps, pendant lamps, chandeliers, recessed lights, track lights, accent lights, stage lighting, movie lighting, street lights, flood lights, beacon lights, security lights, traffic lights, headlamps, taillights, and signs.

Proposed Amended Claim 42 (Substitute for Original Claim 21)

42. The device of claim ~~[[19]]~~40 in which the light scattering material within the light diffusing layer corresponds to an average particle size that improves the OFF state white appearance of the wavelength conversion component.

Proposed Amended Claim 43 (Substitute for Original Claim 25)

43. The device of claim ~~[[19]]~~40 in which the wavelength conversion layer and the light diffusing layer comprises planar shapes.

Proposed Amended Claim 44 (Substitute for Original Claim 26)

44. The device of claim ~~[[19]]~~40 in which the light diffusing layer comprises a dome or elongated dome shape.

Proposed Amended Claim 45 (Substitute for Original Claim 29)

45. A light bulb comprising:

a connector base configured to be inserted in a socket to form an electrical connection for the light bulb;

a body comprising one or more solid-state light emitters;

a wavelength conversion component having a three dimensional shape that is configured to enclose the one or more solid-state light emitters and to in part at least define a light mixing chamber,

wherein the wavelength conversion component comprises a wavelength conversion layer comprising particles of at least one photoluminescence material and a light diffusing layer comprising particles of a light scattering material,

wherein the light diffusing layer improves an off-state white appearance of the wavelength conversion component;

wherein the wavelength conversion component is configured such that in operation a portion of light comprising blue light having a wavelength of ~~greater than or equal to 440 nm~~ between 450 nm and 470 nm generated by the one or more solid-state light emitters is emitted through the wavelength conversion component to contribute to a final visible emission product;

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.

Proposed Amended Claim 46 (Substitute for Original Claim 11)

46. The component of claim ~~[[1]]~~30, wherein the light scattering material has an average particle size that is selected such that the light scattering material will scatter the excitation light relatively more than the light scattering material will scatter light generated by the at least one photoluminescence material.

Proposed Amended Claim 47 (Substitute for Original Claim 12)

47. The component of claim ~~[[11]]~~46, wherein the light scattering material scatters the excitation light at least twice as much as light generated by the at least one photoluminescence material.

Proposed Amended Claim 48 (Substitute for Original Claim 13)

48. The component of claim ~~[[11]]~~46, wherein the excitation light comprises blue light.

Proposed Amended Claim 49 (Substitute for Original Claim 14)

49. The component of claim ~~[[13]]~~48, wherein the light scattering material has an average particle size that is less than about 150 nm.

CERTIFICATE OF PAGE COUNT UNDER 37 C.F.R. § 42.24(a)(vi)

I, the undersigned, do hereby certify that the foregoing Patent Owner's Motion to Amend contains under 25 pages, as specified by 37 C.F.R. § 42.24(a)(vi).

/Charles M. McMahon/

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CERTIFICATE OF SERVICE

I hereby certify that on November 13, 2025, a true and correct copy of the foregoing was served by electronic mail upon the following counsel of record for

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