Trials@uspto.gov
571-272-7822

Paper 17
Entered: March 5, 2025

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.

IPR2024-01357
Patent 8,604,678 B2

Before THOMAS L. GIANNETTI, KEVIN W. CHERRY, and DANIEL KAZHDAN, *Administrative Patent Judges*.

KAZHDAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

Savant Technologies LLC d/b/a GE Lighting and LEDVANCE LLC (collectively, "Petitioners"[1]) filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of 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"). Feit Electric Company, Inc. ("Patent Owner") filed a Preliminary Response arguing both that we should exercise our discretion to deny institution based on parallel district court litigations and that Petitioners have not shown a reasonable likelihood of prevailing (Paper 13, "Prelim. Resp."). With our permission, Petitioners filed a reply (Paper 14, "Reply"), and Patent Owner filed a surreply (Paper 16, "Surreply").

We conclude that we should not discretionarily deny the Petition based on parallel district court litigations involving the '678 patent. We further determine that Petitioners have established a reasonable likelihood that they will prevail with respect to at least one claim.

We therefore grant the Petition and institute trial on all the challenged claims and all the asserted grounds of unpatentability.

II. BACKGROUND

A. The '678 patent (Ex. 1001)

The '678 patent relates to light-emitting diode (LED) devices that use photoluminescent materials to generate a desired color of light—generally white. Ex. 1001 at 1:24–26. The background section explains that traditional LED devices work by using a diode that emits blue or ultraviolet light and

[1] Petitioners identify "Seoul Semiconductor Co. Ltd." as a real party-in-interest. Pet. 16; Paper 15 at 2.

photoluminescent materials, e.g., phosphors, that absorb the blue/UV light and re-emit light of a different color. *See id.* at 1:30–42, 46–50. The combination of the unabsorbed blue/UV light from the diode and the light emitted by the phosphors appears nearly white to the human eye. *See id.* at 1:42–46.

The problem with these systems, the '678 patent explains, is that the devices do not look white when the diode is in the OFF state. *See id.* at 1:64–2:9. This is because the phosphors continue converting the ambient light to a different wavelength even as the diode is not emitting any blue light. *See id.* The result is that, in the OFF state, traditional LED devices do not look white—they have a yellowish, yellow-orange, or orange-color appearance—which some consumers find is off-putting. *See id.* at 2:9–16. The patent lists several other problems with traditional LED devices as well: the color changes depending on the emission angle and phosphors are relatively costly. *See id.* at 2:17–41.

The '678 patent proposes to solve these problems by modifying the wavelength-conversion component—the component that includes the luminescent material—to include a "a light diffusing layer comprising particles of a light diffractive material" such as TiO_2. *See id.* at 2:55–3:14. The particles in the light diffusing layer are designed to scatter external blue light "decreasing the probability of externally originated photons interacting with a phosphor material." *Id.* at 11:44–45. The patent asserts that, if properly assembled, this arrangement leads to various improvements in the LED devices: the devices have a "white color appearance" even in their OFF state; there is more "color uniformity of emitted light from an LED device for emission angles over a ±60° range from the emission axis"; and there is a

"substantial[] reduc[tion in] the quantity of phosphor material required to generate a selected color of emitted light" by as much as 40%. *Id.* at 3:15–32.[2]

B. Challenged claims and grounds

Petitioners request that we institute *inter partes* review on the following four grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 6, 7, 9, 10, 16–21, 25, 26	103	Basin-2007,[3] Basin-2005[4]
19, 20, 29	103	Hussell,[5] Basin-2007, van Woudenberg[6]

[2] This summary of the invention is not meant to be exhaustive and is included only to highlight features of the claimed invention.

[3] Grigoriy Basin *et al.*'s US Patent Publ'n No. 2009/0057699 A1 (pub. Mar. 5, 2009) (Ex. 1005). It is called "Basin-2007" because of its filing date of September 4, 2007.

[4] Grigoriy Basin *et al.*'s US Patent Publ'n No. 2007/0045761 A1 (pub. Mar. 1, 2007) (Ex. 1006). It is called "Basin-2005" because of its filing date of August 26, 2005.

[5] Christopher P. Hussell and John Adam Edmond's US Patent Publ'n No. 2010/0124243 A1 (pub. May 20, 2010) (Ex. 1011).

[6] Roel van Woudenberg *et al.*'s Int'l Patent Publ'n No. WO 2008/044171 A2 (pub. Apr. 17, 2008) (Ex. 1020).

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 6, 10, 16, 19, 21, 25	103	Krummacher,[7] Shimizu,[8] Stokes[9]
19, 20, 29	103	Hussell, Krummacher, van Woudenberg

Pet. 18. Claims 1 and 29 are illustrative and recite:

> 1. 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 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* generated by the light emitting device is emitted through the wavelength conversion component to contribute to a final visible emission product.
>
> . . .
>
> 29. A *light bulb* comprising:

---

[7] Benjamin Claus Krummacher's US Patent Publ'n No. 2008/0079015 A1 (pub. Apr. 3, 2008) (Ex. 1007).

[8] Yoshinori Shimizu's US Patent No. 6,069,440 (issued May 30, 2000) (Ex. 1010).

[9] Edward Brittain Stokes's US Patent No. 6,791,259 B1 (issued Sept. 14, 2004) (Ex. 1008).

> 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* 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.

Ex. 1001 at 26:8–24; *id.* at 28:40–61 (emphases added).

C. Declaratory testimony

Petitioners submit a declaration by Dr. William A. Doolittle. Ex. 1002. Patent Owner submits a declaration by Dr. E. Fred Schubert. Ex. 2001.

D. Related proceedings

The parties identify the following three district court proceedings as related:

- *Feit Elec. Co. v. Ledvance, LLC*, No. 5:24-cv-31 (E.D. Ky.; filed Feb. 2, 2024) (the "Kentucky litigation");
- *Feit Elec. Co. v. Savant Techs. LLC*, No. 1:24-cv-473 (N.D. Ohio; filed Mar. 13, 2024) (the "Ohio litigation"); and

- *Feit Elec. Co. v. Elong Int'l USA Inc.*, No. 3:24-cv-1089 (N.D. Tex.; filed May 6, 2024) (the "Texas litigation").[10]

Pet. 17; Prelim. Resp. 3; Paper 15 at 2. The parties also identify the following two pending PTAB proceedings involving the '678 patent:

- *Savant Techs. LLC v. Feit Elec. Co.*, IPR2025-00258; and
- *Elong Int'l USA Inc. v. Feit Elec. Co.*, IPR2025-00260.

Prelim. Resp. 2 n.1; Paper 15 at 3.

III. REQUEST FOR DENIAL UNDER § 314(A)

The parties dispute whether we should exercise our discretion to deny the petition because of the parallel district court litigations. *See* Prelim. Resp. 26–35; Paper 14 at 1–5; Paper 16 at 1–5. After considering the submissions of the parties, we choose not to exercise our discretion to deny institution.

By statute, the Director has authority to determine whether to institute *inter partes* review. *See* 35 U.S.C. § 314. "The Director is permitted, but never compelled, to institute an IPR, and no petitioner has a right to such institution." *Apple Inc. v. Vidal*, 63 F.4th 1, 6 (Fed. Cir. 2023) (citations omitted). The Director has delegated the decision of whether to institute *inter partes* review to the Board. *See* 37 C.F.R. § 42.4(a). The Director has also provided "instructions," *inter alia* through designating the Board's *Fintiv* decision as precedential, "regarding how the Board is to exercise the

[10] According to Petitioners, "Elong International USA Inc. is not a Real Party-in-Interest, but it does have a business relationship" with a Real Party-in-Interest of Petitioners. Pet. 16.

Director's institution discretion." *Apple*, 63 F.4th at 8 (citing *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020)).

Fintiv set forth the following six non-exclusive factors for determining "whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding":

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

IPR2020-00019, Paper 11 at 5–6. In evaluating these factors, we "take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

We address each of the *Fintiv* factors below.

A. *Fintiv* Factor 1: Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

Patent Owner argues that the first *Fintiv* factor is neutral because "no court has granted a stay and no evidence exists that a stay may be granted." Prelim. Resp. 29 (bolding emitted). Petitioners reply that "this factor is neutral or weighs slightly against discretionary denial" because the Ohio

court agreed to reconsider this issue if *inter partes* review is instituted and "[c]ourts are nearly uniform in granting motions to stay proceedings following institution by the Board." Reply 2.

We find that this factor marginally favors Petitioners. *Fintiv* explains that the fact that a "district court has denied a motion for stay without prejudice" and has indicated on the record "that it will consider a renewed motion or reconsider a motion to stay if a PTAB trial is instituted" "has usually weighed against exercising authority to deny institution." *Fintiv*, Paper 11 at 6–7. That is what happened here. When the district court denied Petitioner Savant's motion for a stay in the Ohio litigation, it stated that, "[i]f the Patent Trial and Appeal Board accepts the petition for *inter partes* review, the parties may rebrief this issue." *See* No. 1:24-cv-473 (N.D. Ohio) December 12, 2024, Order. Ex. 1025. Thus, this factor weighs marginally against exercising discretion to deny institution.

B. *Fintiv* Factor 2: Proximity of the court's trial date to the Board's projected statutory deadline for a Final Written Decision

No trial has been scheduled in the Kentucky and Ohio litigations, so, for those cases, the parties rely on the average time to trial to predict when trial will occur. Additionally, the parties use the time-to-trial statistics to try and assess whether the Texas litigation will occur as scheduled. However, the parties dispute the underlying trial statistics, and we begin by addressing the timing of the three litigations involving the '687 patent individually. We then address the significance of these dates.

The Kentucky litigation: In the Preliminary Response, Patent Owner asserts that the U.S. Federal Court Management Statistics show that "the current time to trial for the Eastern District of Kentucky district court action

against Petitioner Ledvance is 24.3 months." Prelim. Resp. 30 (citing Ex. 2006). Since the filing date of the Kentucky litigation is February 2, 2024, the estimated trial date will be February 2026. *See id.* Petitioners, meanwhile, assert that "the most recent information available indicates a time-to-trial in E.D. Ky. of 45.4 months (EX1026), not the 24.3 months suggested by [Patent Owner], meaning that a trial . . . would occur long after [the Final Written Decision]." Reply 2. Patent Owner's reply does not dispute Petitioners' data. Paper 16 at 2.

We agree with Petitioners. Patent Owner's "24.3 months" number is from the "12-Month Period[] Ending" on June 30, 2019. Ex. 2006. Petitioners' 45.4 months figure comes from the 12-month period ending on September 30, 2022. *See* Ex. 1026; Ex. 2022. Because Petitioners' figure is based on more recent information, we determine that it more likely reflects the court's current average time-to-trial. Thus, we reasonably expect that the Kentucky litigation will not proceed to trial until late 2027, which is well after we would issue a final written decision in early 2026.

The Ohio litigation: The parties agree that trial in the Ohio litigation will likely occur after we would issue a Final Written Decision. *See* Prelim. Resp. 31; Paper 14 at 2; Paper 16 at 2–3.

The Texas litigation: The court has scheduled trial in the Texas litigation for January 20, 2026. *See* Ex. 2005. When the parties filed their papers, the USPTO was following now-rescinded guidance that expressly allowed parties to "present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration." As explained below, we need not decide in this case whether the time-to-trial statistics are still

relevant in situations where the district court has already scheduled a trial because we agree with Patent Owner that the time-to-trial statistics are congruent with the scheduled trial date.

The Texas litigation was filed on May 6, 2024, and, according to Patent Owner, the average time to trial in the Northern District of Texas is 19.8 months from the filing date—which, here, would be the end of December 2025 (i.e., before the scheduled trial date). Prelim. Resp. 31 (citing Ex. 2006). Thus, Patent Owner argues that it is likely that the trial will occur on the scheduled date. *See id.* In the Surreply, Patent Owner argues that the time-to-trial in the Northern District of Texas is actually shorter, at 18.1 months, only furthering Patent Owner's argument that the Texas litigation will occur as scheduled. *See* Paper 16 at 2 (citing Exs. 2021, 2022). Petitioners again dispute Patent Owner's statistics. According to Petitioners, the average time to trial is 32.1 months, and, "in the only patent case to reach trial in N.D. Tex. in the past two years, trial was 34.5 months from filing." Reply 3 (citing Exs. 1027, 1028).

We agree with Patent Owner. Patent Owner's "19.8 months" number is from the "12-Month Period[] Ending" on June 30, 2024. Ex. 2006. Petitioners' 32.1 months figure comes from the 12-month period ending on March 31, 2024. *See* Ex. 1027; Ex. 2021 (12-month period ending in March 2024 is 22.7 months); Ex. 2022 (12-month period ending in September 2024 is 18.1 months). Although we think it is unlikely that the time to trial changed so significantly since March 31, 2024, Patent Owner's data is more recent. More importantly, Patent Owner's data comports with the scheduled trial date. We put little stock in the fact that the one Northern District of Texas patent case from the last two years had trial 34.5 months after filing—

because it is just one example. We thus find that it is reasonable to expect the Texas litigation to occur as scheduled.

Analyzing the factors: Patent Owner argues that the second *Fintiv* factor weighs against institution, Prelim. Resp. 31; Paper 16 at 2–3, while Petitioners argue that it weighs for institution. Paper 14 at 2–3.

We find that this factor favors Petitioners. We reasonably expect the Kentucky litigation (which involves one of Petitioners) and the Ohio litigation (which involves the other) to go to trial after we would issue a final written decision. Thus, we expect that instituting this trial will save work that would otherwise be conducted in the Kentucky and Ohio litigations. To be sure, we reasonably expect the Texas litigation (which does not involve either of Petitioners) to go to trial as planned. However, because the Texas litigation does not involve either of Petitioners, we give it less weight. (We analyze the overlap of parties further in assessing the fifth factor.)

C. *Fintiv* Factor 3: Investment in the parallel proceeding by the court and the parties

Patent Owner argues that the third *Fintiv* factor weighs in favor of denying institution for two reasons. It asserts that, "[b]y the time an institution decision is rendered in mid-March 2025, Patent Owner and Petitioners will have completed extensive claim construction discovery and briefing and likely have conducted a *Markman* hearing." Prelim. Resp. 32; *see id.* at 31–33. It also argues that neither of Petitioners acted expeditiously, *see id.* at 32–33, which *Fintiv* teaches is significant, *see* IPR2020-00019, Paper 11 at 11–12. (In the Surreply, Patent Owner essentially repeats the first reason. *See* Paper 16 at 3.) Petitioners, unsurprisingly, dispute both arguments. They argue that there has been "little, if any, investment from the

courts" and that the parties have "conducted little discovery." Reply Br. 3. They also argue that they filed the Petition "expeditiously, *prior* to [Patent Owner]'s infringement contentions against Petitioner Ledvance (EX1029) and only three months after [Patent Owner]'s initial infringement contentions against Petitioner Savant (EX1032)." *Id.* at 3 (capitalization altered). According to Petitioners, the reason Savant delayed was to address newly asserted claims. *See id.* at 3–4.

We find that this factor favors Petitioners. Although the parties have engaged in some preliminary work in the parallel district court proceedings, the court has not issued any substantive orders, so this weighs against discretionary denial. *See Fintiv*, IPR2020-00019, Paper 11 at 10 ("If, at the time of the institution decision, the district court has not issued orders related to the patent at issue in the petition, this fact weighs against exercising discretion to deny institution . . . ."). The fact that Petitioners filed the Petition before infringement contentions were served in one case and only a few months after the contentions were served in the other persuades us that Petitioners were not dilatory in seeking *inter partes* review.

D. *Fintiv* Factor 4: Overlap between issues raised in the Petition and in the parallel proceeding

In its Preliminary Response, Patent Owner argues that the fourth *Fintiv* factor favors denial because "Petitioners have presented the exact same art and grounds of unpatentability in this Petition that [they are] asserting in the district court case." Prelim. Resp. 33; *see id.* at 33–34. Patent Owner acknowledges that there is incomplete overlap between the claims at issue in the district court proceedings and the claims challenged in the Petition, but it argues the overlap is substantial. *See id.* at 34. Petitioners

reply that statutory estoppel pursuant to 35 U.S.C. § 315(e)(2) will prevent any significant overlap, but to be safe they offer a *Sand Revolution* stipulation—named after the stipulation in *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 12 (PTAB June 16, 2020) (informative). Reply 4. Specifically, Petitioners agree that "if IPR is instituted, they will not pursue the same invalidity grounds in the parallel litigations." *Id.* In the Surreply, Patent Owner concedes that, with the stipulation, *Fintiv* "Factor 4 weighs marginally against discretionary denial." Paper 16 at 3. (Later in the Surreply, Patent Owner asserts that the "fourth Fintiv factor[] weigh[s] strongly in favor of discretionary denial," *id.* at 5, but that assertion ignores the *Sand Revolution* stipulation.)

As Patent Owner now concedes, this factor only marginally favors Petitioners. The informative *Sand Revolution* decision involved a stipulation like the one offered by Petitioners, and the Board held that such stipulations make the fourth factor "weigh[] marginally in favor of not exercising discretion to deny institution." Paper 24 at 12. The fact that this trial would involve some different claims only further weighs against denying institution on this ground.

E. *Fintiv* Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party

The defendants in the Kentucky and the Ohio litigations are the Petitioners here. The defendants in the Texas litigation are not. According to Patent Owner, this means the fifth *Fintiv* factor favors denial, Prelim. Resp. 34, but according to Petitioners it favors institution, Reply 5. In the Surreply, Patent Owner notes that the defendants in the Texas litigation have

sought to join these proceedings, and it argues that if the motion is granted, then there will be complete overlap in parties. Paper 16 at 4–5.

On the whole, this factor favors Petitioners. As discussed in our analysis of Factor 2, the Texas litigation is the only litigation that is far enough along that it would favor denial under *Fintiv* Factor 2. However, that is the one litigation that does not involve Petitioners.

We recognize that the defendants in the Texas litigation have moved to join these proceedings in an "understudy" role. *See* IPR2025-00258 Paper 4. At most, though, the fact that these defendants are close to their trial date might be relevant to whether we should grant a motion for joinder—an issue not before us and for which we offer no opinion.

F. *Fintiv* Factor 6: Other circumstances that impact the Board's exercise of discretion, including the merits

Fintiv instructs us to look at "other circumstances," and "if the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution." *Fintiv*, Paper 11 at 14–15. For the reasons discussed below in the merits section, we conclude that Petitioners have presented strong evidence of unpatentability for at least one claim.

G. Balancing the *Fintiv* Factors

A holistic balancing of the *Fintiv* factors weighs against discretionary denial. As discussed above, Factors 1 and 4 weigh marginally against denial and Factors 2, 3, 5 and 6 weigh against denial. Thus, the evidence of record weighs against exercising our discretion to deny institution of *inter partes* review.

IV. OBVIOUSNESS OF THE CHALLENGED CLAIMS

An *inter partes* review may not be instituted unless the information in the petition and the preliminary response "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.108(c). Here, Petitioner challenges the claims as being obvious under 35 U.S.C. § 103. A claim is unpatentable as obvious if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) so-called "secondary considerations." *See id.* at 399 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). At this stage, neither party has presented any evidence of secondary considerations. *See* Pet. 80.

A. Level of Ordinary Skill in the Art

According to Petitioners,

> [A person of ordinary skill in the art] would have had an undergraduate degree (i.e., B.S., B.S.E. or the equivalent) in electrical engineering, materials science, physics, or a similar discipline. A [person of ordinary skill in the art] would also have one to two years of experience in the field of LED packaging design. More education could substitute for experience, and vice versa.

Pet. 6. For purposes of institution, "Patent Owner takes no position with respect to Petitioner's proposed level of ordinary skill in the art." Prelim. Resp. 36–37. At this stage, we adopt the formulation of the level of ordinary skill in the art proposed by Petitioners and applied by Patent Owner as consistent with the prior art before us in this proceeding.

B. Claim Construction

"In IPR proceedings the Board now applies the *Phillips* claim construction standard governing federal courts." *CUPP Computing AS v. Trend Micro Inc.*, 53 F.4th 1376, 1380 (Fed. Cir. 2022) (citing 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); *Polaris Innovations Ltd. v. Brent*, 48 F.4th 1365, 1372 n.3 (Fed. Cir. 2022)). *Phillips* teaches that the "words of a claim are generally given their ordinary and customary meaning," i.e., "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1312 (citations omitted). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

The parties seem to disagree on how to construe the term "light diffusing layer." Petitioners argue that the "claims themselves define the 'light diffusing layer' as simply 'comprising particles of a light scattering material' and 'improv[ing] an off-state white appearance of the wavelength conversion component.'" Reply 5 (alterations in original). Petitioners

contend that the "light diffusing layer" need not be uniform, reduce costs, or improve the spatial uniformity of color. *Id.* at 6.

In its Preliminary Response, Patent Owner intimates that some purpose requirements should be read into the claims because "'[t]he context in which a term is used in the asserted claim can be highly instructive'" and because "'when a patent . . . describes the features of the "present invention" as a whole, this description limits the scope of the invention.'" Prelim. Resp. 43 (quoting *Phillips*, 415 F.3d at 1314; *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1308 (Fed. Cir. 2007)). It is unclear to us from the Surreply whether Patent Owner believes this is a claim construction argument or an obviousness argument, *see* Paper 16 at 5–6, although, either way, we reject it.

Phillips explains that "a bedrock principle of patent law [is] that the claims of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (citations omitted). *Phillips* thus cautions that, "although the specification often describes very specific embodiments of the invention, [the Federal Circuit has] repeatedly warned against confining the claims to those embodiments." *Id.* at 1323; *see also CAO Lighting, Inc. v. Feit Elec. Co.*, No. 2023-1906, 2024 WL 4503218, at *3 (Fed. Cir. Oct. 16, 2024) (rejecting an attempt by Feit to limit the claimed invention based on the embodiments). "We depart from the plain and ordinary meaning in only two instances. The first is when a patentee acts as his own lexicographer. The second is when the patentee disavows the full scope of the claim term in the specification or during prosecution." *Poly-Am., L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016) (citations omitted). "To act as its own lexicographer, a patentee must clearly set forth a

definition of the disputed claim term other than its plain and ordinary meaning." *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citations omitted). Similarly, disavowal requires "expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Id.* at 1366 (citations omitted).

We determine that the plain and ordinary meaning of "light diffusing layer" is exactly what it says: "a layer that diffuses light." The claims separately recite one function for this layer: it must "improve[] an off-state white appearance of the wavelength conversion component." Ex. 1001 at 26:15–17; *see id.* at 27:25–27. That is all.

Patent Owner appears to try and read additional "purpose" limitations into the claims, but, at this stage, we conclude that there are no statements in the intrinsic record that rise to the level of lexicography or disclaimer. For example, Patent Owner writes:

> The purpose of the light diffusing layer in the '678 Patent is three-fold: (1) to improve the OFF-state color appearance; (2) reduce the overall costs of the LED device by minimizing the amount of phosphor wavelength conversion layer needed; and (3) improve the spatial uniformity of the light color. *See* Ex. 2001 ¶ 78.

Prelim. Resp. 9; *see* Paper 16 at 5–6. In his declaration, Patent Owner's expert, Dr. Schubert, merely states that the layer has these three functions without further supportive evidence. *See* Ex. 2001 ¶ 78. While the first purpose (to improve the OFF-state color appearance) is reflected in the claims, the second and third purposes are not. We therefore will not read them into the claims.

Similarly, Patent Owner distinguishes Basin-2007's silicone encapsulant, which protects the semi-conductor LED die, from the light-

diffusing layer recited in the claims, because "the light diffusing layer's purpose in the '678 patent is not to encapsulate or protect, unlike the silicone encapsulant in Basin-2007." Prelim. Resp. 41–42 (citing Ex. 2001 ¶ 112); *see id.* at 40–42. Patent Owner further argues that the Basin-2007 encapsulant is not uniform, which is different than the "the light diffusing layer in the '678 Patent, which 'comprises a uniform thickness layer of particles.'" *Id.* at 43 (quoting Ex. 1001, 8:19–20). Dr. Schubert's declaration essentially repeats these arguments with no supporting evidence. *See* Ex. 2001 ¶¶ 112, 115. Again, we will not read "purpose" limitations (and certainly not negative purpose limitations) or thickness limitations into the claims of the '678 patent.

Likewise, in attempting to distinguish Krummacher, Patent Owner asserts that Krummacher's layer 6 has a different "aim[]" than the recited light diffusion layer: "Krummacher seeks to minimize the amount of diffusing particles used, while the '678 Patent seeks to maximize the amount of diffusing particles." Prelim. Resp. 48–49 (citing Ex. 2001 ¶¶ 123–24). Dr. Schubert's declaration again essentially repeats this argument with no further justification. *See* Ex. 2001 ¶¶ 123–24. Again, though, Patent Owner's asserted "aim" is not recited in the claims.

In sum, for purposes of determining whether to institute trial, we construe the phrase "light diffusing layer" as "a layer that diffuses light," and the layer must "improve[] an off-state white appearance of the wavelength conversion component." But we will not read other purposes into the claims.

C. Overview of the prior art

The '678 patent admits that portions of the claimed invention were taught in the prior art taught. The prior art taught "white LEDs [that] include one or more one or more photoluminescent materials (e.g., phosphor materials), which absorb a portion of the radiation emitted by the LED and re-emit light of a different color (wavelength)." Ex. 1001 at 1:35–38. The prior art taught that the LED emits blue light and the phosphors absorb this light and reemit light that, in combination with the LED's blue light, looks white. *See id.* at 1:38–46. The Preliminary Response thus focuses on two aspects of the claimed invention: the "light diffusing layer" and the wavelength of the blue light. Correspondingly, we focus our overview of the prior art on those aspects as well.

1. Basin-2007

Basin-2007 it titled "LED with Particles in Encapsulant for Increased Light Extraction and Non-Yellow Off-State Color." Ex. 1005 (54) (capitalization altered). Basin-2007 explains that it is common to make LEDs using a die "that emit[s] blue light covered by a layer of yttrium aluminum oxide garnet (YAG) phosphor that emits a yellow-green light when energized by the blue light." *Id.* ¶ 3. As its Title suggests, Basin-2007 is concerned with the problem described above—that, when the LED is in the OFF state, the phosphor coating appears yellow-green, which is "not attractive." *Id.* ¶ 4. Basin-2007 suggests solving this problem by including "granules of TiOx, ZrOx, or other white non-phosphor inert material . . . mixed with the substantially transparent encapsulant for LEDs." *Id.* ¶ 5.

Basin-2007's Figure 2, reproduced below, is particularly relevant to this case.

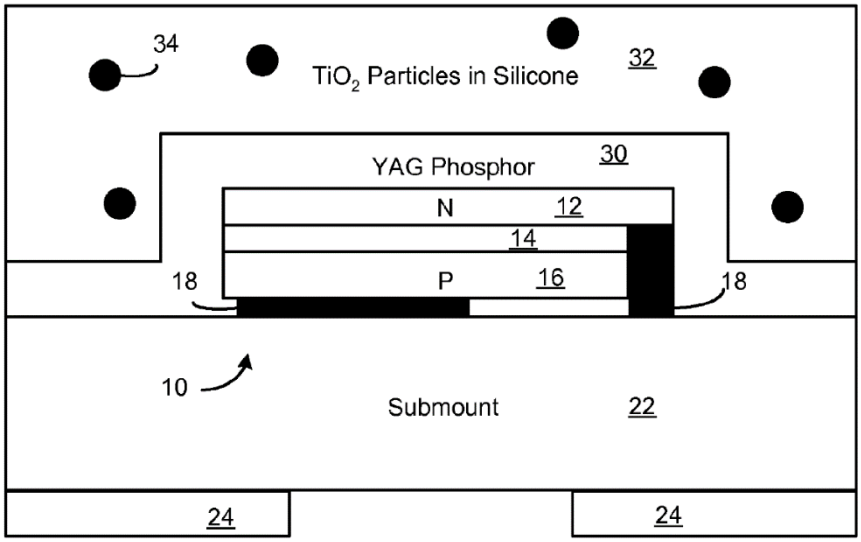


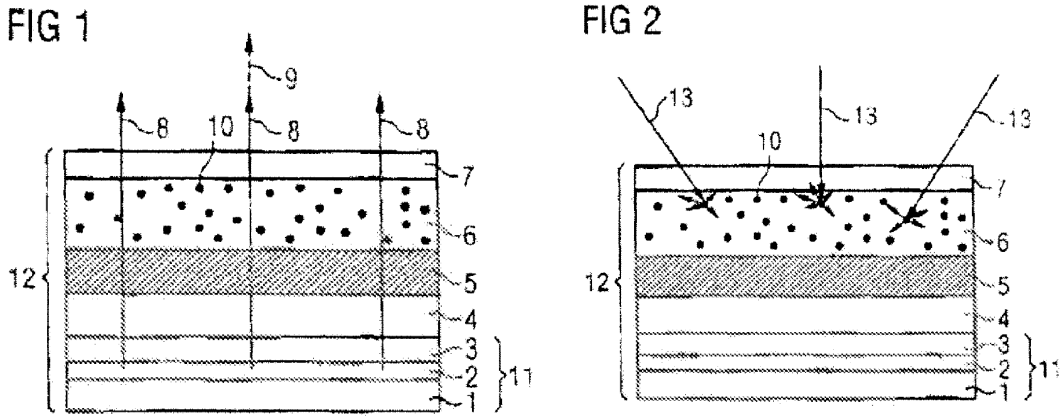
Fig. 2

The figure depicts "a cross-sectional view of a flash LED . . ., where TiO_2 particles are mixed with the encapsulant." *Id.* at ¶ 13. In the figure, reference number "30" refers to "a phosphor layer . . . for wavelength-converting the blue light emitted from the active layer 14"; reference number "32" refers to the "silicone encapsulant"; and reference number "34" refers to TiO_2 particles. *See id.* ¶¶ 27, 29, 31.

2. Krummacher

Krummacher, too, is directed to the OFF-state problem mentioned above. *See* Ex. 1007 ¶¶ 3–4. Krummacher explains that it was known to combine a component that contains an LED that generates blue or UV light with a luminescence conversion layer to convert some of the light to yellow, "such that the blue or ultraviolet radiation emitted by the active region is superimposed on the fraction converted to the complementary color to yield white light." *Id.* ¶¶ 3, 4, 33. The problem with this approach, Krummacher explains, is that the luminescence conversion layer emits yellow light even

when the light-emitting component is in its OFF state, so the surface looks yellow, "which is often found unattractive by observers." *Id.* ¶ 4. Krummacher suggests solving this problem by including scattering particles, "[p]articularly . . . TiO_2 or Al_2O_3." *Id.* ¶ 39; *see id.* Abs.; ¶ 6. Krummacher's Figures 1 and 2, reproduced below, are particularly relevant to this case.



Figures 1 and 2 depict "a schematic graphic representation of a cross section through an optoelectronic component" in the ON and OFF state, respectively. *Id.* ¶¶ 27, 28. In these figures, reference number "5" depicts the "luminescence conversion layer," and reference number "6" depicts the "light-scattering translucent layer." *Id.* ¶¶ 37–39. Krummacher explains that "the light-scattering translucent layer 6 contains light-scattering particles 10, which, as illustrated in FIG. 2, serve to scatter environmental light 13 striking the optoelectronic component from the outside. . . . Particularly suitable are particles of TiO_2 or Al_2O_3." *Id.* ¶ 39.

D. Obviousness grounds

1. Ground 1: Basin-2007 in view of Basin-2005

Petitioners argue that claims 1–3, 6, 7, 9, 10, 16–21, 25, and 26 would have been obvious over the combination of Basin-2007 and Basin-2005. *See* Pet. 19–39. In response, Patent Owner addresses all of the claims as a group and makes two arguments: (1) the cited art does not disclose the recited

"light diffusing layer," *see* Prelim. Resp. 38–45; and (2) there would be no motivation to combine the art, *see id.* at 50–57. We focus on these two arguments.

(a) "light diffusing layer"

Claim 1 recites "a light diffusing layer comprising particles of a light scattering material." Ex. 1001 at 26:13–14. Petitioners point to Basin-2007's Figure 2, reproduced above, and they assert that the encapsulant mixed with TiO_2 particles in layer 32 is a light-diffusing layer. *See* Pet. 12, 22 (citing Ex. 2006 ¶¶ 5, 13, 17, 19, 31, 37, 42).

Patent Owner responds that layer 32 does not disclose the recited light-diffusing layer for three reasons. *See* Prelim. Resp. 39–45. *First*, Basin-2007's explanation of "[t]he *purpose* of using the silicone encapsulant indicates that it is more similar to the purpose of the '678 Patent's light transmissive substrate, which provides protection for the LED, than to the light diffusing layer." *Id.* at 40 (emphasis added); *see id.* at 40–42. *Second*, the silicone encapsulant in Basin-2007 has a "secondary purpose" of maximizing brightness, and it therefore proposes using TiO_2 in a range of 0.5–10%. *Id.* at 42 (citing Ex. 2005 at ¶ 5) (emphasis added). By contrast, the '678 patent uses TiO_2 "to reduce the variation in emitted light color with emission angle" and therefore prefers a higher range of TiO_2—of between 7% to 35% and preferably 10% to 20%. *Id.* at 42 (quoting Ex. 1001 at 3:54–57 (citations omitted)). *Third*, "Basin-2007's silicone encapsulant 32 with TiO_2 particles 34 does not have a uniform thickness, unlike the light diffusing layer in the '678 Patent." *Id.* at 43. To support such a requirement for the claims, Patent Owner points to the '678 patent's disclosure that the

diffusing layer "comprises a uniform thickness layer." *Id.* at 43 (quoting Ex. 1001 at 8:19–21) (citations omitted).

For the reasons explained above in the claim construction section, at this stage we conclude that the claims do not include the requirements—of "purpose" or "thickness"—that Patent Owner is using to distinguish the prior art. Thus, we conclude that (1) it irrelevant whether the prior art does or does not protect the LED; (2) it is irrelevant whether the prior art's systems maximize brightness and whether the TiO_2 range in the prior art embodiments differ from the exemplary ranges described in the '678 patent's specification but not recited in the claims; and (3) it is irrelevant whether Basin-2007's layer is uniform.

Patent Owner emphasizes the Federal Circuit's statement that "[o]bviousness may be defeated if the prior art indicates that the invention would not have worked for its intended purpose." *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017) (quoted in Prelim. Resp. 53; Paper 16 at 6). However, Patent Owner's argument is premised on a misunderstanding of this statement. The Federal Circuit has "repeatedly held that the motivation to modify a prior art reference to arrive at the claimed invention need not be the same motivation that the patentee had." *Honeywell Int'l Inc. v. 3G Licensing, S.A.*, 124 F.4th 1345, 1353 (Fed. Cir. 2025) (citations omitted). Thus, the fact that the obvious combination may not accomplish all of the '678 patent's purposes is immaterial. What matters, *Meiresonne* is explaining, is that a skilled artisan would reasonably expect it to accomplish some purpose. At this stage, we find that the combination would improve the OFF-state color appearance.

(b) Motivation to combine

According to Petitioners, "Basin-2007 discloses every element in challenged claims 1-3, 6, 7, 9, 10, 16-21, 25, and 26 with one exception: it does not specifically disclose that the LED chip emits blue light at a wavelength of greater than or equal to 440 nm." Pet. 19. Petitioners argue that LED chips emitting light of this wavelength were well known as taught in Basin-2005. *See id.* Petitioners continue that it would have been obvious to use Basin-2005's light source in Basin-2007's system because the two are "structural[ly] similar[]," and a skilled artisan would have expected success given Basin-2005's disclosure that its white-light LED light source is "relatively easy to implement and consistently produces the desired white light temperature." *Id.* at 25 (quoting EX1006 ¶ 6) (citations omitted); *see id.* at 19–20. Citing Shimizu's and Stokes's disclosures of blue-light LEDs with wavelengths greater than or equal to 440 nm, Petitioners argue that a skilled artisan "would understand that the blue light LEDs used in conventional white-light LED light sources typically had wavelengths greater than 440 nm." *Id.* at 24–25 (citing Shimizu "Ex. 1010 figs.; 23:43, 27:4-5, 28:55, 25:24-25, 29:45 (peaks at 450, 460, or 470nm)" and Stokes, "EX1008, 4:37-40 (420-480nm), 6:62-67 (peaks of 450nm or 480nm)").

Patent Owner responds that there would have been no motivation to combine Basin-2005 and Basin-2007. According to Patent Owner, skilled artisan "would not seek to combine Basin-2005, which may use UV LEDs, with Basin-2007, which discloses only blue LEDs, not UV LEDs, due to the differing packaging requirements between those LEDs." Prelim. Resp. 52, 55–56. Patent Owner continues that Petitioners have not shown that it would have been easy to incorporate Basin-2005's LED into Basin-2007's system

or that there would have been a reasonable expectation of success. *See id.* Additionally, Patent Owner argues that the two Basin references are directed to different LEDs: Basin-2007 is generally directed to LEDs used in a flash (e.g., in a camera) whereas Basin-2005 is used in longer energization—i.e., headlamps. *See id.* at 54–55.

We find that there is a reasonable likelihood that Petitioners will prevail in showing that it would have been obvious to use blue light with a wavelength that is greater than 440 nm. Basin-2007 does not specify a specific wavelength for the blue light, but, as Patent Owner acknowledges, "blue light is generally emitted in the range of 380 to 500 nm." Prelim. Resp. 55; *see* Ex. 1002 ¶ 121. Thus, the question is whether a skilled artisan, when looking for which wavelength to use, would have found it obvious to use anything in the half of the blue-light range that is greater than or equal to 440 nm. On its own, this overlap in ranges would be strong evidence of obviousness. *See Galderma Lab'ys, L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013).

Petitioners show even more. Basin-2005 discloses that there is an "assum[ption]" that blue-light LEDs emit "in the range of 420-490 nm." Ex. 1006 ¶ 30 (cited in Pet. 25). Basin-2005 additionally teaches that its "blue, UV, or near UV LED[s]" are "relatively easy to implement and consistently produce[] the desired white light temperature." *Id.* ¶ 6 (cited in Pet. 25). Furthermore, Shimizu and Stokes indicate that people were using higher wavelength blue-light in their LEDs. *See* Pet. 8, 24–25 (citing sources). Because a skilled artisan would have needed to select some wavelength for the blue light disclosed in Basin-2007, at this stage, we conclude that the skilled artisan would have found it obvious to include

wavelengths from the higher end of the range—as disclosed in so many references. Basin-2007 discloses using a "conventional white light LED." *See* Ex. 1005 ¶ 21. As evidenced by Shimizu and Stokes, the conventional white light LED sources used blue light with wavelengths greater than or equal to 440 nm. *See* Ex. 1002 ¶ 121 (citing sources). Patent Owner argues that "quantum efficiency" considerations would lead to using lower wavelengths, but Patent Owner does not explain why these same considerations did not convince Basin-2005, Shimizu, or Stokes to use lower wavelengths. Based on our review of the current record, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Basin-2005 and Basin-2007 render claim 1 unpatentable as obvious.

2. Ground 2: Hussell, Basin-2007, and van Woudenberg

Petitioners argue that claims 19, 20, and 29 would have been obvious over the combination of Hussell, Basin-2007, and van Woudenberg. Petitioners admit that Hussell does not disclose a light-diffusing layer, but they argue that this is disclosed in Basin-2007. *See* Pet. 39, 40, 50. Petitioners also admit that Hussell does not disclose the specific wavelength, but they argue that this is disclosed in van Woudenberg. *See id.* at 40. According to Petitioners, a skilled artisan would have been motivated to combine Hussell, Basin-2007, and van Woudenberg with a reasonable expectation of success to avoid the OFF-state problem discussed above. *See id.* at 40, 47–51, 54. Petitioners argue that there is an additional motivation to combine Hussell and Basin-2007. Hussell discloses that "[t]exturing may enhance scattering of light." Ex. 1011 ¶ 48. The TiO_2 particles in Basin-2007 would also enhance light scattering. *See* Pet. 51.

Patent Owner makes two arguments in response. *First*, it argues that Basin-2007 does not disclose a "light diffusing layer." *See* Prelim. Resp. 46. For the reasons discussed above, we reject Patent Owner's argument.

Second, Patent Owner argues that there would have been no motivation to combine Hussell, Basin-2007, and van Woudenberg with a reasonable expectation of success, "because both the structural differences of the LEDs themselves in addition to the differing applications from one reference to the next require vastly different packaging approaches that would prevent a POSITA from having the motivation to combine these references." Prelim. Resp. 59; *see id.* at 57–61. Patent Owner additionally argues that Hussell's bulbs could be frosted, which would cover up the OFF-state yellow color. *See id.* at 59.

We find on the record before us at this stage that there is a reasonable likelihood that Petitioners will prevail in showing a motivation to combine Hussell, Basin-2007, and van Woudenberg with a reasonable expectation of success. As Petitioners explain, the prior art recognized the problem that LED lights had an unappealing color in their OFF state, and it taught that it is desirable to increase light scattering. *See* Pet. 48–51. Basin-2007 taught a solution to OFF-state problem—adding light-scattering TiO_2 particles—and Basin-2007's solution would also have the benefit of scattering light. *See id.* at 50. Furthermore, Basin-2007 teaches how to do so. *See id.* (citing Ex. 1005 ¶ 31). And the proposed combination would work for all bulbs—not just frosted ones. Based on our review of the current record, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Hussell, Basin-2007, and van Woudenberg render claim 1 unpatentable as obvious.

3. Ground 3: Krummacher, Shimizu, and Stokes

Petitioners argue that claims 1–3, 6, 10, 16, 19, 21, and 25 would have been obvious over the combination of Krummacher, Shimizu, and Stokes. *See* Pet. 55–77. In response, Patent Owner addresses all of the claims as a group and makes two arguments: (1) the cited art does not disclose the recited "light diffusing layer," *see* Prelim. Resp. 46–49; and (2) there would be no motivation to combine the art, *see id.* at 62–65. We address these in turn.

(a) "light diffusing layer"

Petitioners focus on Krummacher's Figures 1 and 2, reproduced above, and assert that layer 6 is a light-diffusing layer containing TiO_2 particles. *See* Pet. 55, 58–59. Patent Owner argues that Krummacher's layer 6 has a different "aim[]" than the recited light diffusion layer. Prelim. Resp. 48–49. As explained above, this "aim" is not required by the claim. To the extent Patent Owner is arguing that the motivation to modify Krummacher would not be the same as Patent Owner's own motivation, this is irrelevant. *See Honeywell*, 124 F.4th at 1353. We thus conclude that there is a reasonable likelihood Petitioners will be able to show that Krummacher discloses the recited "light diffusing layer."

(b) Motivation to combine

"Krummacher does not specify the wavelength of blue light emitted by its LED chip," but Petitioners argue that a skilled artisan would have understood that Krummacher's blue light includes blue light with wavelengths greater than or equal to 440 nm and that it would have been obvious to use such wavelengths in view of Stokes and Shimizu. Pet. 61–62. Patent Owner argues that there would be no motivation to combine these

references and that there would be no reasonable expectation of success. *See* Prelim. Resp. 62–65. The parties' arguments on the motivation to combine Krummacher, Shimizu, and Stokes with a reasonable expectation of success are similar to the arguments on the combination of Basin-2007 and Basin-2005, and, at this stage, we agree with Petitioners for the reasons given above. Based on our review of the current record, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Krummacher, Shimizu, and Stokes render claim 1 unpatentable as obvious.

4. Ground 4: Hussell, Krummacher, and van Woudenberg

Petitioners' arguments as to why claims 19, 20, and 29 would have been obvious over the combination of Hussell, Krummacher, and van Woudenberg are similar to the arguments discussed above regarding the combination of Hussell, Basin-2007, and van Woudenberg. *See* Pet. 77–79. Correspondingly, Patent Owner's response is similar as well. *See* Prelim. Resp. 49–50, 65–67. For the reasons discussed above, we conclude, at this stage, that a skilled artisan would have been motivated to combine the prior art with a reasonable expectation of success. Based on our review of the current record, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Hussell, Krummacher, and van Woudenberg render claim 1 unpatentable as obvious.

V. CONCLUSION

We find that Petitioners have shown a reasonable likelihood of prevailing on at least one ground. We therefore institute *inter partes* review of all the challenged claims on all the challenged grounds. *See SAS Inst., Inc. v. Iancu*, 584 U.S. 357 (2018).

VI. ORDER

It is ORDERED that the Petition is *granted*, and pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–3, 6, 7, 9, 10, 16–21, 25, 26, and 29 of the '678 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '678 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

For PETITIONERS:

David C. Radulescu
Andrew S. Brown
RADULESCU LLP
david@radip.com
andy@radip.com

For PATENT OWNER:

Michael Pomeroy
Alexis L. Ritzer
Scott Breedlove
CARTER ARNETT BENETT & PEREZ PLLC
mpomeroy@carterarnett.com
aritzer@carterarnett.com
sbreedlove@carterarnett.com