

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HISENSE USA CORPORATION,
Petitioner,

v.

BRIGHTPLUS VENTURES LLC,
Patent Owner.

IPR2023-01410
Patent 8,294,075 B2

Before BARBARA A. PARVIS, STACEY G. WHITE, and
JOHN D. HAMANN, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

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

I. INTRODUCTION

Hisense USA Corporation (“Petitioner”) filed a Petition (Paper 1 (“Pet.”)) requesting *inter partes* review of claims 1–7 and 9–12 (“challenged claims”) of U.S. Patent No. 8,294,075 B2 (Ex. 1001, “the ’075 patent”). Brightplus Ventures LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4. We may institute an *inter partes* review if “the information presented in the petition . . . and any 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).

Upon consideration of the contentions and the evidence of record at this preliminary stage, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’075 patent. Accordingly, we grant Petitioner’s request and institute an *inter partes* review of all challenged claims of the ’075 patent and with respect to all grounds set forth in the Petition.

II. BACKGROUND

A. *Real Parties-in-Interest*

Petitioner identifies itself as a real party-in-interest. Pet. 1. Petitioner also identifies Hisense Group, Hisense Group Holdings Co., Ltd.; Hisense Visual Technology Co., Ltd.; Hisense International (Hong Kong) America Investment Co., Ltd.; Hisense International (HK) Co., Ltd.; Hisense International Co., Ltd.; TVS REGZA Corporation. *Id.* Patent Owner names itself as the real party-in-interest. Paper 4, 1.

B. Related Matters

Both parties identify, as a matter involving or related to the '075 patent, *Hisense USA Corp. v. Brightplus Ventures LLC*, No. 1:22-cv-02774 (N.D. Ga.) (“parallel district court case”). Pet. 1; Paper 4, 1. Patent Owner also identifies two terminated federal district court cases. Paper 4, 1–2.

Patent Owner indicates that U.S. Patent No. 9,605,835 B2 (“the '835 patent”) is related to the '075 patent. Paper 4, 1. Petitioner indicates that a petition was filed on July 14, 2023 challenging the '835 patent and is assigned IPR2023-01168 (“the 1168 IPR”). Pet. 2.

C. The '075 Patent

The '075 patent is titled “Solid State Luminaires for General Illumination.” Ex. 1001, code (54). The '075 patent relates to solid state lighting and to systems and methods for adjusting the light output of solid state lighting. Ex. 1001, 1:14–17.

To illustrate one embodiment, Figure 5A of the '075 patent is reproduced below.

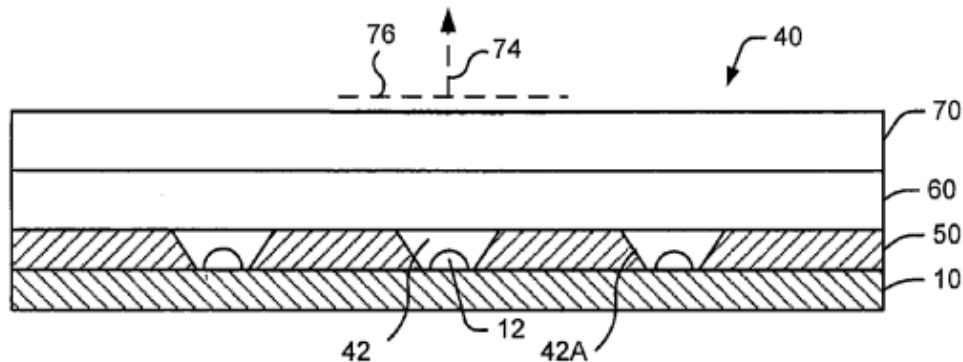


FIGURE 5A

Figure 5A is a cross-sectional view of lighting panel 40, which includes tile 10, lighting elements 12, reflector sheet 50, diffuser sheet 60, and

brightness enhancement film 70. *Id.* at 6:1–3, 10:63–11:3, 11:28–30.
Lighting panel 40 may include more than one tile 10. *Id.* at 10:64–67.
Reflector sheet 50 includes apertures 42 that align with lighting elements 12. *Id.* at 11:10–12. Apertures 42 have sidewalls 42A that are angled relative to the surface of tile 10 to form reflective optical cavities around lighting elements 12. *Id.* at 11:24–27. Diffuser sheet 60 scatters light passing therethrough to diffuse light emitted by lighting elements 12 and reflected by reflector sheet 50. 11:30–33.

Figure 6A of the '075 patent, reproduced below, illustrates an embodiment of brightness enhancement film 70.

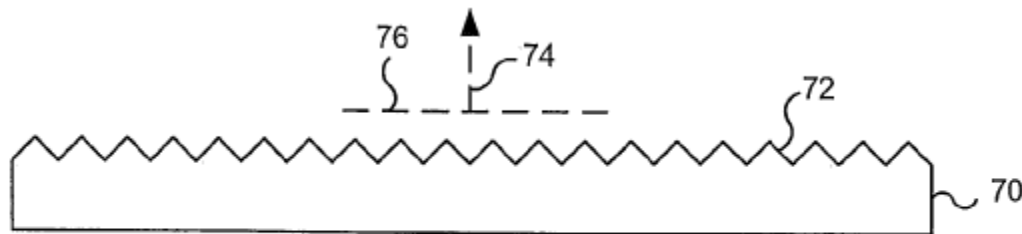


FIGURE 6A

Figure 6A is a schematic illustration of an embodiment of brightness enhancement film 70 having three-dimensional light extraction features 72. *Id.* at 6:4–6, 11:59–61. Three-dimensional light extraction features 72 have sidewalls that are angled relative to principal plane 76 of lighting panel 40. *Id.* at 11:61–63.

Figure 6B of the '075 patent, reproduced below, illustrates brightness enhancement film 70 in operation.

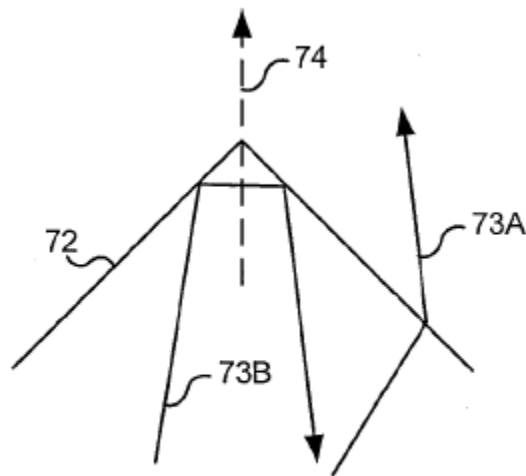


FIGURE 6B

Figure 6B is a schematic illustration of the operation of one of three-dimensional light extraction features 72 with respect to light ray 73A and light ray 73B. *Id.* at 6:4–6, 11:59–12:1. The illustrated one of three-dimensional light extraction features 72 includes sidewalls that are angled with respect to principal plane 76 of the lighting panel 40 such that exemplary light ray 73A is bent toward optical axis 74 that is perpendicular to principal plane 76 of the lighting panel 40 when it exits brightness enhancement film 70. *Id.* at 11:61–66. In contrast, light ray 73B is internally reflected back into diffuser sheet 60 where it is further recycled. *Id.* at 11:61–12:1. Recycling refers to the emission of light rays that are reflected back into lighting panel 40 at a different location or in a different direction. *See id.* at 11:53–57.

D. Illustrative Claim

Petitioner challenges claims 1–7 and 9–12 of the '075 patent. Pet. 4. Claim 1 is the only independent challenged claim. Claims 2–7 and 9–12

depend, directly or indirectly, from claim 1. Independent claim 1, reproduced below, is illustrative of the claimed subject matter.

1. [Preamble¹] A lighting panel, comprising:
 - [1A] at least one substrate having a first side parallel to a principal plane of the lighting panel;
 - [1B] a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light;
 - [1C] a reflector sheet on the first side of the at least one substrate;
 - [1D] a brightness enhancement film on the reflector sheet, [1E] wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and [1F] the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel; and
 - [1G] a diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the reflector sheet, the diffuser sheet and brightness enhancement film extend and are arranged parallel to the principal plane of the lighting panel.

Ex. 1001, 21:51–22:3.

E. Evidence

Petitioner relies on the patent references summarized in the table below.

Name	Reference	Exhibit
Mok	US 2006/0227545 A1, filed Apr. 11, 2005, published Oct. 12, 2006	1005
Holman	WO 03/056876 A2, filed Dec. 13, 2002, published July 10, 2003	1006

¹ Herein we use Petitioner’s designations for the elements of claim 1. Pet. 14–23.

Name	Reference	Exhibit
Lamb	US 2005/0135115 A1, filed Dec. 23, 2003, published June 23, 2005	1007
Epstein	US 2005/0265029 A1, filed June 1, 2004, published Dec. 1, 2005	1008

Petitioner also relies on the Declaration of P. Morgan Pattison, Ph.D. (Ex. 1003) to support its contentions that the challenged claims are unpatentable. Patent Owner relies on the Declaration of Mr. William Bohannon (Ex. 2001) in support of its contentions that Petitioner has not shown that the challenged claims are unpatentable.

F. Asserted Grounds

Petitioner asserts that the challenged claims of the '075 patent are unpatentable based on the following grounds summarized in the table below (Pet. 4):

Claim(s) Challenged	35 U.S.C. § ²	References/Basis
1–7, 9–12	103(a)	Mok, Holman, Lamb, knowledge of a POSITA ³
1–7, 9–12	103(a)	Epstein, Holman, Lamb, knowledge of a POSITA

III. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the challenged claims of the '075 patent have an apparent effective filing date before March 16, 2013, the pre-AIA version of § 103 applies.

³ POSITA means person of ordinary skill in the art.

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 ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness, i.e., secondary considerations.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art

would have had at least a graduate degree in mechanical engineering, physics, materials science, electrical engineering, or a related discipline, coupled with at least four years' experience in designing backlighting systems for displays; the level of ordinary skill in the art is approximate and additional education could make up for a lack of experience or vice-versa.

Pet. 8 (citing Ex. 1003 ¶ 28).

Patent Owner argues that a person of ordinary skill in the art

would have [had] (a) a Bachelor's of Science degree in a technical field and at least four years of experience in the field of design and/or manufacture of display systems; (b) a Master's of Science degree in a technical field and at least two years of experience in the field of design and/or manufacture of display systems; or (c) a PhD in a technical field relating to the design and/or manufacture of display systems. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

⁴ Neither party presents objective evidence of nonobviousness at this stage of the proceeding.

Prelim. Resp. 4 (citing Ex. 2001 ¶¶ 27–30).

Petitioner refers to Patent Owner’s proposed qualifications presented in the parallel district court case, which are the same as those above presented in its Preliminary Response in this proceeding. Pet. 8. Petitioner does not explain why we should favor Petitioner’s proposed qualifications over those presented by Patent Owner and, instead, characterizes Patent Owner’s proposed qualifications as only “slightly different” than the qualifications proposed by Petitioner. *Id.* Petitioner states “[a]s Dr. Pattison testifies, ’075 Patent would be obvious under either level of skill.” *Id.* (citing Ex. 1003 ¶ 28).

For purposes of this Decision, and based on the current record, we adopt Patent Owner’s assessment of the level of skill for one of ordinary skill in the art, except we decline to adopt “at least” as that language is vague and open-ended. Petitioner has not argued that Patent Owner’s assessment is inconsistent with the level of skill reflected in the specification of the ’075 patent or the asserted prior art references, and we do not discern an inconsistency based on the record before us.

C. Claim Construction

Below we discuss construction of two terms, specifically, “on” recited in independent claim 1 and “direct contact” recited in dependent claim 7. We interpret the challenged claims

using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b). Under this standard, the words of a claim generally are given their “ordinary and customary meaning,” which is the meaning the term would have had to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification.

Phillips v. AWH Corp., 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

“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).

I. “on”

We discuss a preliminary construction of the term “on” to address a dispute between the parties regarding limitation 1D, which is “a brightness enhancement film *on* the reflector sheet” (emphasis added).⁵ Petitioner does not propose an express construction for this term. Pet. 8–9. Patent Owner provides the parties’ constructions proposed in the parallel district court case, but argues that the disagreement regarding those constructions “appears to be of form, rather than substance.” Prelim. Resp. 5–6.

Relying on the testimony of Mr. Bohannon, Patent Owner, however, argues further in this proceeding that the term “on” is limited such that “there cannot be an airgap” between the brightness enhancement film and the reflector sheet in limitation 1D. *Id.* at 6 (citing Ex. 2001 ¶ 36), 11, 21. Mr. Bohannon testifies the “term ‘on’ as used in the ’075 Patent requires contact either directly on, or with intervening elements present.” Ex. 2001 ¶ 36 (citing Ex. 1001, 6:47–51). Mr. Bohannon also testifies this

⁵ We note that the term “on” is recited elsewhere in the claims.

construction “is consistent with the purpose of the invention in the ’075 Patent which avoids light loss or light leakage.” *Id.* (citing Ex. 2003, 4; Ex. 2004, 9–10; Ex. 2005, 9–10).

The constructions proposed in the parallel district court case, which are submitted by Patent Owner in this proceeding, appear to be similar. Prelim. Resp. 4; Ex. 2003, 4. Patent Owner’s proposed construction is “directly on, or on, with intervening elements present.” *Id.* Petitioner’s proposed construction is “directly on the other element or intervening elements may be present.” *Id.* Patent Owner also argues that the “parties seem to agree that the specification of the ’075 Patent provides the definition of the term ‘on.’” Prelim. Resp. 5 (citing Ex. 1001, 6:47–51; Ex. 2003, 9).

We turn to whether the term “on” is limited such that “there cannot be an airgap” between the brightness enhancement film and the reflector sheet in limitation 1D. We start by considering the intrinsic evidence of record, examining the claim language itself and the written description. *DePuy*, 469 F.3d at 1014. Neither party relies on the prosecution history at this stage of the proceeding. Although limitation 1D recites “a brightness enhancement film *on* the reflector sheet” (emphasis added), limitation 1G recites “*a diffuser sheet between* the reflector sheet and the brightness enhancement film” (emphasis added). The ’075 patent describes that “[i]t will be understood that when an element such as a layer, region or substrate is referred to as being ‘on’ or extending ‘onto’ another element, it can be directly on or extend directly onto the other element or intervening elements may also be present.” Ex. 1001, 6:47–51.

We note that Figure 5A of the ’835 patent shows an embodiment where there does not appear to be any air gap between layers. *See* Ex. 1001,

Fig. 5A. Nowhere does the written description, however, limit the meaning of “on” to that embodiment. Our reviewing court has “cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015) (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1328 (Fed. Cir. 2002)). Indeed, the ’075 patent states that its “invention may . . . be embodied in many different forms and should not be construed as limited to the embodiments set forth herein.” Ex. 1001, 6:31–33. Moreover, we further note that Figure 5B of the ’835 patent shows an embodiment where there *does* appear to be air gaps between layers. See Ex. 1001, Fig. 5B.

We preliminarily find that column 6, lines 47 through 51 of the ’075 patent provides a meaning of the term “on.” That disclosure in the ’075 patent states that “[i]t will be understood that *when an element such as a layer, region or substrate is referred to as being ‘on’ or extending ‘onto’ another element, it can be directly on or extend directly onto the other element or intervening elements may also be present.*” Ex. 1001, 6:47–51 (emphasis added). Our preliminary finding is consistent with both parties’ constructions proposed in the parallel district court case. Prelim. Resp. 4; Ex. 2003, 4. We agree with Patent Owner that the disagreement between the parties in the parallel district court case appears to be of form, rather than substance. Prelim. Resp. 5. We decline to resolve that dispute here.

We also preliminarily find that Patent Owner’s construction in this proceeding prohibiting airgaps is not consistent with the meaning of the term “on” based on the intrinsic record as understood based on the arguments made at this early juncture. Because intervening elements, such as a diffuser

sheet, may be present, the intrinsic record does not support a narrow meaning of the term “on.” As will be discussed further below, the ’075 patent describes in “contrast” to the term “on,” the term “directly on” means “there are no intervening elements present.” Ex. 1001, 6:51–53. We, therefore, preliminarily find that construing “on” such that airgaps may be present is consistent with the claim language and patent disclosure. Ex. 1001, 6:47–51, 21:51–22:3.

Mr. Bohannon’s testimony cites to the same portion of the ’075 patent discussed above. Ex. 2001 ¶ 36 (citing Ex. 1001, 6:47–51). Mr. Bohannon’s testimony that Patent Owner’s proposed construction “is consistent with the purpose of the invention in the ’075 Patent which avoids light loss or light leakage” (*id.* (citing Ex. 2003, 4; Ex. 2004, 9–10; Ex. 2005, 9–10)) does not identify evidence that supports sufficiently his testimony. Mr. Bohannon’s testimony cites to documents filed in the parallel district court case. To the extent those documents provide supporting evidence, they cite to the same disclosure in the ’075 patent discussed above. Ex. 2004, 9–10 (citing Ex. 1001, 6:47–51); Ex. 2005, 9–10 (citing Ex. 1001, 6:47–51). That disclosure does not discuss avoiding light loss or light leakage. Ex. 1001, 6:47–51.

For purposes of this Decision, we do not need to resolve the claim construction dispute between the parties in the parallel district court case. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). On the record before us, we preliminarily

determine only that the term “on” does not exclude air gaps between layers, as proposed by Patent Owner. *See id.* at 6.

We are mindful that “the same claim term in the same patent or related patents carries the same construed meaning.” *Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003). The ’835 patent challenged in the 1168 IPR is related to the ’075 patent challenged here. At this juncture, our claim construction determination is the same as that in the Decision to Institute in the 1168 IPR. *See* 1168 IPR, Paper 7, 9–10. In that Decision to Institute, the panel states “we see no reason why an intervening element would exclude an air gap.” *Id.* at 9. We do not include that exact statement in our discussion above, but if we added that statement, our analysis herein would not change.

2. “direct contact”

We discuss a preliminary construction of the term “direct contact” to address a dispute between the parties regarding dependent claim 7, which recites “wherein the diffuser sheet is in *direct contact* with the reflector sheet and the brightness enhancement film” (emphasis added). At this preliminary stage, neither party provides an express construction of the term.

We start by considering the intrinsic evidence of record, examining the claim language itself and the written description. *DePuy*, 469 F.3d at 1014. Neither party relies on the prosecution history at this stage of the proceeding. The recitation in dependent claim 7 is that the contact must be “*direct*” (emphasis added). The relevant portion of the ’075 Patent’s disclosure is below.

It will be understood that when an element such as a layer, region or substrate is referred to as being “on” or extending “onto” another element, it can be directly on or

extend directly onto the other element or intervening elements may also be present. In *contrast*, when an element is referred to as being “*directly on*” or extending “*directly onto*” another element, *there are no intervening elements present*.

Ex. 1001, 6:47–53 (emphases added).

The '075 patent expressly describes with respect to “directly on” that “intervening elements” are not present. Accordingly, on the record before us, we preliminarily determine that the term “direct contact” excludes air gaps between layers.

D. Overview of the Asserted Art

1. Mok (Exhibit 1005)

Mok is titled “Light Emitting Panel.” Ex. 1005, code (54). Mok describes light emitting panels. Ex. 1005 ¶ 7. To illustrate one embodiment, Figure 1 of Mok is reproduced below.

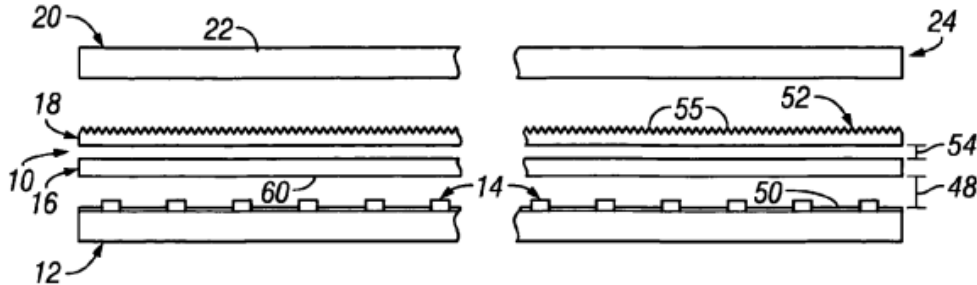


FIG. 1

Figure 1 shows a side view of light emitting panel 10, which is positioned adjacent to display device 20 to form backlit display system 24. *Id.* ¶¶ 10, 15. Display device 20 includes liquid crystal display panel 22. *Id.* ¶ 15.

Light emitting panel 10 includes base panel 12, light emitting elements 14, diffuser 16, and brightness enhancer 18. Ex. 1005 ¶ 15. Base panel 12 includes reflective surface 50, which recycles (i.e., reflects) light

that is reflected by back surface 60 of diffuser 16. *Id.* ¶ 21. Reflective surface 50 may be a separate component that is affixed to base panel 12. *Id.*

Diffuser 16 receives and diffuses light produced by light emitting elements 14 and light reflected by reflective surface 50. Ex. 1005 ¶ 22. Diffuser 16 is “adjacent” to base panel 12 (*id.* ¶ 15) and is separated from base panel 12 by spaced-distance 48. *Id.* ¶ 23.

Brightness enhancer 18 includes prisms 55 defined by front surface 52 of brightness enhancer 18, which collect light from diffuser 16 and direct it out front surface 52. Ex. 1005 ¶ 24. This maximizes the on-axis brightness of panel 10. *Id.* Brightness enhancer 18 is “adjacent” to diffuser 16 (*id.* ¶ 15) and is separated from diffuser 16 by spaced-distance 54. *Id.* ¶ 25. According to Mok, brightness enhancer 18 may comprise “a brightness enhance film (BEF) available from 3M and sold under the registered trademark Vikuiti®.” *Id.* ¶ 24.

2. *Holman (Exhibit 1006)*

Holman is titled “Uniform Illumination System.” Ex. 1006, code (54). Holman describes optical illumination systems. Ex. 1006, code (57). To illustrate one embodiment, Figure 7 of Holman is reproduced below.

FIG. 7

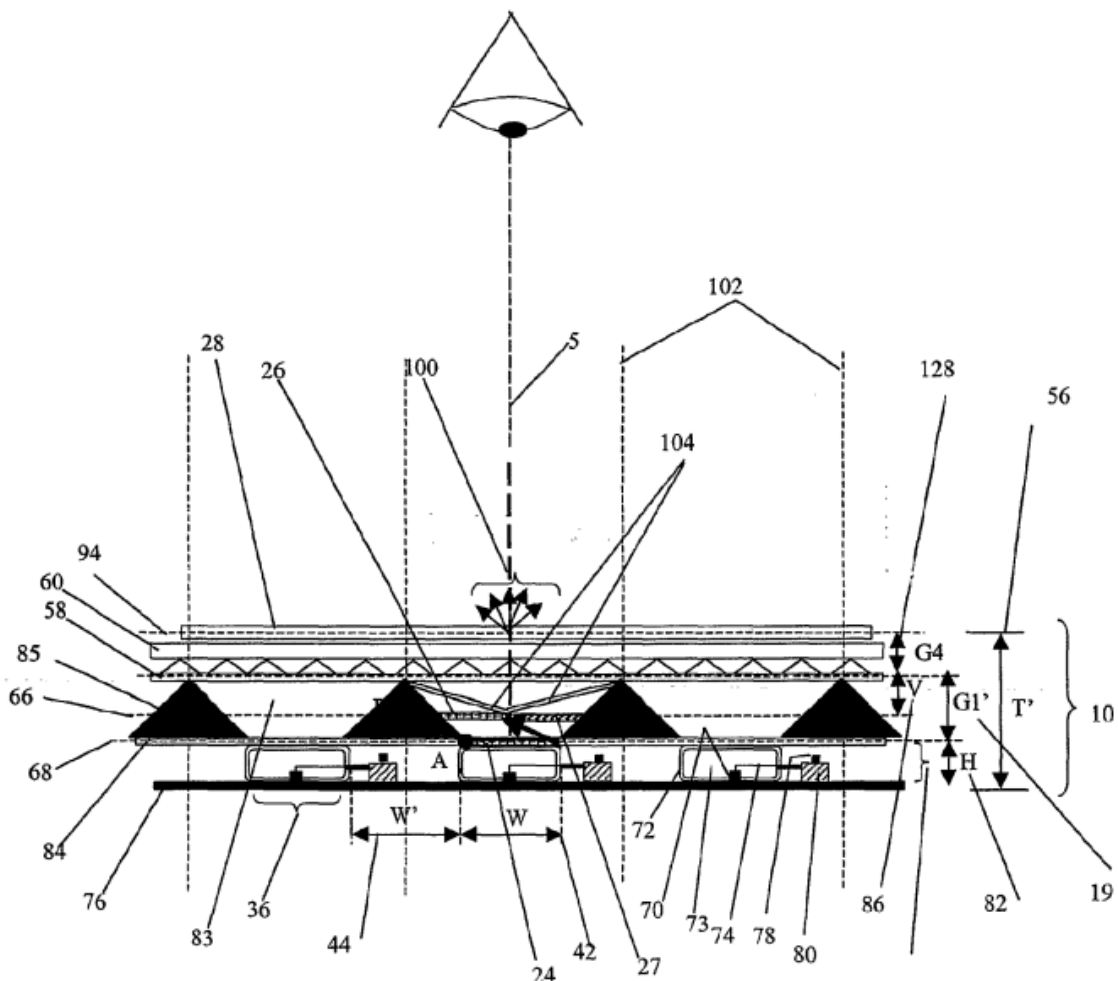


Figure 7 shows a side view of a light source panel optical system. *Id.* at 150.⁶ The optical system comprises various components, including emitting entities 72 with light emitting diodes [LEDs] 70 and emitting apertures 24, diffuser 68, structure 84 with sidewalls 85, prism sheets 58 and 60, and output screen 28. *Id.* at 10–11, 13, 36–37, 39. With respect to the prism sheets, Holman explains,

⁶ Our citations to Holman, as well as Patent Owner's citations to Holman, refer to the original page numbers in Holman. Petitioner's citations to Holman refer to the assigned Bates numbers in Holman.

One unique aspect of elevated prism sheets 58 and 60 . . . is that they do not have to exhibit the extreme standards in cosmetic perfection that have been associated with 3M's BEF in direct view brightness enhancement applications. Cosmetic defects in 3M's BEF are directly viewable through the [liquid crystal display] LCD display screens beneath which they are used. And, the LCD viewing standard is for zero viewing defects. Accordingly, extreme quality measures are taken during BEF's manufacturing, packaging and handling to prevent cosmetic damage to the prism substrate and prism tips, which are extremely fragile. Preventative measures include discarding all damaged BEF sheets. No such costly measures are needed with present prism sheets 58 and 60. Cosmetic defects in prism sheets 58 and 60 cannot be directly viewed, and are therefore much less critical to function. Some degree of spatial mixing has been included above the prism sheets that blur or totally homogenize any visual defects local prism imperfections might contribute.

Id. at 121.

3. *Lamb (Exhibit 1007)*

Lamb is titled "Multiple Lightguide Backlight." Ex. 1007, code (54). Lamb relates to backlighting systems. Ex. 1007, code (57). As background, Lamb describes a "traditional direct-lit backlight." *Id.* ¶ 34. To illustrate, Figure 1 of Lamb is reproduced below.

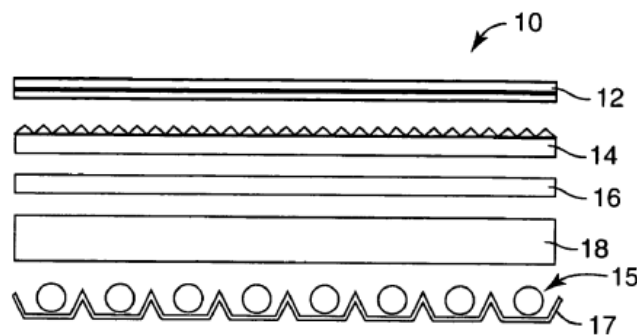


FIG. 1
PRIOR ART

Figure 1 shows a "cross-sectional view of a presently available direct-lit backlight for LCD televisions." *Id.* ¶ 20. Backlight 10 includes light

bulbs 15, reflector 17, diffuse plate 18, diffuser sheet 16, enhancement film 14, and reflective polarizer 12. *Id.* ¶¶ 34–35.

Lamb specifies that its enhancement film 14 may comprise “Vikuiti™ Brightness Enhancement Film BEF, available from 3M Company.” Ex. 1007 ¶ 35. Lamb explains that enhancement film 14 refracts light within a certain angle toward the viewer. *Id.* According to Lamb, light outside that angle is recycled, which means that it is reflected back into backlight 10 where it travels within the system until it reaches the appropriate angle for exiting the system. *Id.*

4. *Epstein (Exhibit 1008)*

Epstein is titled “LED Array Systems.” Ex. 1008, code (54). Epstein describes “lighting or display assemblies.” Ex. 1008 ¶ 1. To illustrate one embodiment, Figure 11 of Epstein is reproduced below.

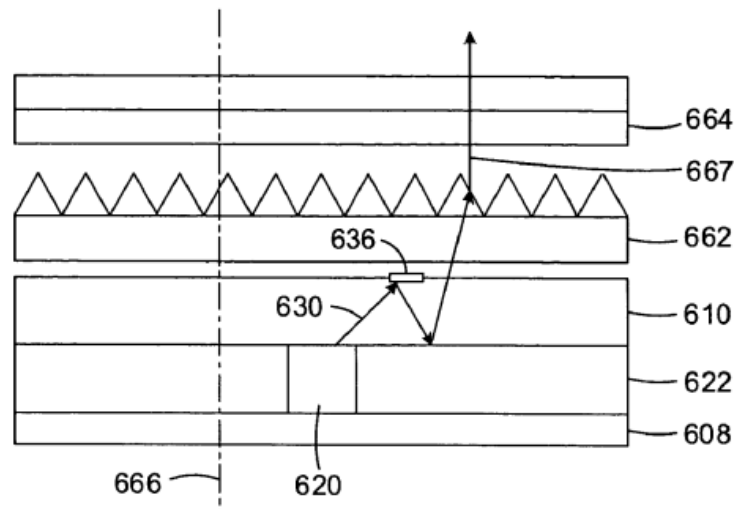


FIG. 11

Figure 11 shows a light emitting element. *Id.* ¶ 23. The light emitting element includes substrate 608, LED 620, intermediate layer 622, guiding layer 610, diffractive light extraction element 636, first brightness enhancing

film 662, and second brightness enhancing film 664. *Id.* ¶¶ 67, 74.

Intermediate layer 622 may be a reflecting film. *Id.* ¶ 67.

Light 630 from LED 620 passes into guiding layer 610. Ex. 1008 ¶ 67. Using diffractive light extraction element 636, the light emitting element emits light from guiding layer 610 in a first direction relative to axis 666. *Id.* ¶ 74, Fig. 11. Light 667 is refracted when it exits first brightness enhancing layer 662 in a second direction that is closer to axis 666 than the first direction. *Id.* ¶ 74.

E. Asserted Obviousness over Mok, Holman, and Lamb

Petitioner asserts that claims 1–7 and 9–12 are unpatentable as obvious over the combination of Mok, Holman, and Lamb. Pet. 4. Patent Owner disputes Petitioner’s showing for claims 1, 6, 7, and 10. Prelim. Resp. 9–20.

1. Reasoning to Combine

The Petition includes a section entitled “Motivation to Combine Mok, Holman, and Lamb” that appears to pertain to all challenged claims. Pet. 11–14. Petitioner argues each of Mok, Holman, and Lamb are in the same field of endeavor and a person having ordinary skill in the art would have had a reasonable expectation of success in making Petitioner’s proposed combinations. Pet. 12 (citing Ex. 1003 ¶ 111). Relying on the testimony of Dr. Pattison, Petitioner argues a person having ordinary skill in the art would have been motivated (1) to combine Holman’s and Lamb’s teachings with Mok to improve efficiency (*id.* at 12–13 (citing, e.g., Ex. 1005 ¶ 6; Ex. 1006, 2–5; Ex. 1007 ¶ 6; Ex. 1003 ¶¶ 112, 116)); (2) to combine Holman’s teachings with Mok to allow “for a thinner light panel while maintaining light uniformity” (*id.* at 13 (citing Ex. 1006, 15; Ex. 1003 ¶ 113)); (3) to

combine Holman’s teachings of a Fresnel-lens array with Mok to improve “light uniformity” and “quality for the viewer” (*id.* at 13–14 (Ex. 1003 ¶ 114)); (4) to apply Holman’s teachings of a heatsink panel to Mok “to improve cooling and efficient operation of LEDs” (*id.* at 14 (citing Ex. 1003 ¶ 113)); (5) to apply Lamb’s brightness enhancement film to the combination of Mok and Holman “to eliminate thick diffuser plates, provide increased brightness by recycling light, and increase the exit light’s spatial uniformity” (*id.* at 14 (citing Ex. 1007 ¶¶ 8, 35, 48; Ex. 1003 ¶ 114); and (6) to combine Holman’s and Lamb’s teachings with Mok to improve the quality of backlighting by providing better light diffusion (*id.* at 14 (citing Ex. 1003 ¶¶ 115–119)). Petitioner provides additional reasons in its element-by-element analysis of the challenged claims. *Id.* at 14–34.

For limitation 1D, Patent Owner argues that Mok teaches away from Petitioner’s arrangement combining Mok with Holman’s teachings relating to Figures 7 and 8. Prelim. Resp. 12. For limitation 1F and claim 10, Patent Owner argues that a person having ordinary skill in the art would not have been motivated to apply Lamb’s teachings to the combination of Mok and Holman because Lamb teaches an “edge lighting” system that is dissimilar and incompatible with Mok and Holman. *Id.* at 14–16 (citing, e.g., Ex. 2001 ¶¶ 50–51). For claim 7, Patent Owner argues a person having ordinary skill in the art would have recognized “that the spacing between the reflective surface and diffuser is a necessary and unavoidable part of” Mok’s design and would not have made Petitioner’s proposed modification. *Id.* at 18–19 (citing, e.g., Ex. 2001 ¶ 56).

We discuss the disputes between the parties below in our discussion of Petitioner’s element-by-element analysis.

2. *Independent Claim 1*

Petitioner provides a detailed analysis, which we preliminarily find shows where each of the limitations of claim 1 is taught in the asserted prior art. Patent Owner disputes Petitioner's showing for limitations 1D and 1F. The parties' arguments and evidence are addressed below.

a) *Preamble: “[a] lighting panel”*

Relying on the testimony of Dr. Pattison, Petitioner argues “Mok discloses ‘a light emitting panel.’” Pet. 14 (citing Ex. 1005, code (57); Ex. 1003 ¶ 41).⁷ At this early stage, Patent Owner does not dispute Petitioner's showing for the preamble.

We preliminarily find Petitioner's argument supported by Mok's Abstract, which describes that a “lighting panel includes a tile having a first side parallel to a principal plane of the lighting panel, a plurality of solid state lighting devices arranged on the first side of the tile and configured to emit light, a reflector sheet on the first side of the tile, and a brightness enhancement film on the reflector sheet.” Ex. 1005, code (57). Mok also describes that exemplary light emitting panel 10 is shown in Figures 1 and 2. *Id.* ¶ 15.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches the preamble for purposes of institution.

b) *Element 1A: “at least one substrate having a first side parallel to a principal plane of the lighting panel”*

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1A is taught by Mok's description of “a base panel that ‘provides a convenient mounting location for the various light emitting elements’ and

⁷ We take no position at this stage on whether the preamble is limiting.

one that is a ‘generally rectangular shaped, plate-like member . . . commensurate with the intended size of the [light emitting] panel.’” Pet. 15 (citing Ex. 1005 ¶ 19). Petitioner also argues “[i]n Figure 1, the base panel 12 is shown as parallel to principal plane of lighting panel 10.” *Id.* (citing Ex. 1003 ¶¶ 42, 120; Ex. 1005, Fig. 1). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1A.

We preliminarily find that Petitioner’s argument is supported by Mok’s description of base panel 12 including that “base panel 12 may comprise a generally rectangular shaped, plate-like member having a length 38 and a width 40 that are commensurate with the intended size of the panel 10.” Ex. 1005 ¶ 19. We also preliminarily find that Petitioner’s argument is supported by Mok’s Figure 1 showing base panel 12 as parallel to other of the elements comprising lighting panel 10. *Id.* at Fig. 1.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1A for purposes of institution.

c) Element 1B: “a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1B is taught by Mok’s disclosure “that ‘[t]he base panel 12 provides a convenient mounting location for the various light emitting elements 14, allowing them to be arranged in a two[-]dimensional array or pattern over both the length 38 and width 40 of the base panel 12.’” Pet. 15 (citing Ex. 1005 ¶ 19). Petitioner also argues “[t]he various lighting emitting elements described in Mok are LEDs, which are ‘solid state lighting devices.’” *Id.* (citing Ex. 1005 ¶ 29; Ex. 1003 ¶ 42). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1B.

We preliminarily find that Petitioner’s argument is supported by Mok’s disclosure that base panel 12 “provides a convenient mounting location for the various light emitting elements 14, allowing them to be arranged in a two[-]dimensional array or pattern over both the length 38 and width 40 of the base panel 12.” Ex. 1005 ¶ 19. Petitioner’s argument is supported by Dr. Pattison’s testimony that Mok’s LEDs “are ‘solid state lighting devices.’” Ex. 1003 ¶ 42 (citing Ex. 1005 ¶ 29).

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1B for purposes of institution.

d) Element 1C: “a reflector sheet on the first side of the at least one substrate”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1C is taught by Mok’s description “that ‘[t]he reflective surface 50 may comprise a separate component (e.g., a sheet-like material) that is affixed to the base panel 12.’” Pet. 16 (citing Ex. 1005 ¶ 21). Petitioner also argues “Mok Figure 1 further demonstrates how the reflective surface is on the first side of the base panel or substrate.” *Id.* (citing Ex. 1005, Fig. 1; Ex. 1003 ¶¶ 46, 120). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1C. We preliminarily find that Petitioner’s argument is supported by the cited disclosures of Mok. *See, e.g.*, Ex. 1005 ¶ 21 (describing “reflective surface 50,” which is “provided on the base panel 12 to ‘recycle’ (i.e., reflect) light”), Fig. 1 (illustrating reflective surface 50 and light emitting elements 14 on the same side of base panel 12).

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1C for purposes of institution.

e) Element 1D: “a brightness enhancement film on the reflector sheet”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1D is taught by Mok’s description of “a brightness enhancer 18 that is a BEF.” Pet. 17 (citing Ex. 1005 ¶ 24). Petitioner also argues that Mok’s “Figure 1 shows that the BEF 18 is on diffuser 16 with an intervening area of air, while the diffuser 16 is on the reflector 12 with an intervening area of air.” *Id.* (citing Ex. 1005, Fig. 1).

Petitioner argues an alternative theory asserting that, “[t]o the extent that an air gap is not an intervening element, . . . Holman describes and shows a BEF on a reflector sheet without an intervening air gap.” Pet. 17–18 (citing Ex. 1003 ¶ 67). Petitioner argues Holman’s “[p]rism sheets 58 and 60 are BEFs.” *Id.* (citing Ex. 1006, 7–10; Ex. 1003 ¶ 67).

Petitioner argues “[a]s to the physical arrangement of the prism sheets, Holman discloses that prism sheets 58 and 60 are on the reflector (i.e., ‘reflecting layer 76’) via intervening elements that include ‘confining structure 72’ (*see id.*, pp. 37–38), ‘diffusely scattering layer 68’ (*id.*, p. 44), ‘compartmentalized spacer layer 84’ and ‘sidewalls 85’ (*id.*, p. 16).” *Id.* (citing Ex. 1006, 7–10, 15, 43, Fig. 7). Petitioner also argues “[i]n a similar, alternative embodiment, Holman discloses a BEF 131 that rests on a transparent dielectric material 144,” the “transparent dielectric material rests on diffusely scattering layer 68, which in turn rests on confining structure 72,” and “[c]onfining structure 72 abuts reflector 76.” *Id.* at 19 (citing Ex. 1006, Fig. 8).

Petitioner also argues “[i]t would have been obvious to modify Mok’s layer arrangement using Holman’s teachings because there is a general pressure in the art to reduce the thickness of panels, among other reasons.”

Id. at 20 (citing Ex. 1003 ¶¶ 117–120). As discussed above (*see* § III.E.1), in the section of the Petition entitled “Motivation to Combine Mok, Holman, and Lamb,” relying on the testimony of Dr. Pattison, Petitioner argues a person having ordinary skill in the art would have been motivated to combine Holman’s teachings with Mok to allow “for a thinner light panel while maintaining light uniformity.” *Id.* at 13 (citing Ex. 1006, 15; Ex. 1003 ¶ 113).

Patent Owner argues “the term ‘on’ requires that the BEF be ‘directly on’ the reflector or with intervening elements present” and the “air gap in Mok does not disclose this element.” Prelim. Resp. 10–11. Mr. Bohannon testifies “[a]s discussed in the claim construction above, the term ‘on’ requires that the BEF be ‘directly on’ the diffuser or on with intervening elements present” and Mok’s air gap is not an intervening layer. Ex. 2001 ¶¶ 45–46. Patent Owner’s arguments and Mr. Bohannon’s testimony disputing Petitioner’s showing that Mok alone teaches element 1D are premised on Patent Owner’s proposed construction, which we decline to adopt for the reasons given. *See* § III.C.1.

We preliminarily find that Petitioner’s argument that Mok alone teaches element 1D is supported by the cited disclosures of Mok. *See, e.g.*, Ex. 1005 ¶ 24 (describing that “the brightness enhancer 18 is positioned adjacent the diffuser 16,” “[t]he brightness enhancer 18 comprises a plurality of optical elements, such as prisms 55,” and as an example, “the brightness enhancer 18 comprises a brightness enhancement film (BEF) available from 3M and sold under the registered trademark Vikuiti®”), Fig. 1 (illustrating brightness enhancer 18, diffuser 16, and reflective surface 50 stacked in parallel). Additionally, we preliminarily find that Petitioner’s argument that

Mok alone teaches element 1D is supported by Mok’s teaching that its “brightness enhancer 18 is *preferably stacked directly on (or applied to)* the diffuser 16, thereby minimizing or eliminating the distance 54.” *Id.* ¶ 25 (emphases added).

Patent Owner also disputes Petitioner’s alternative theory. In particular, Patent Owner argues “the prism sheets 58 and 60 are not BEFs as used in the ’075 Patent.” Prelim. Resp. 11 (citing Ex. 2001 ¶ 46). Patent Owner also argues that Mok teaches away from Petitioner’s arrangement combining Mok with Holman’s teachings relating to Figures 7 and 8. *Id.* at 12 (citing Ex. 1005 ¶ 23; Ex. 2001 ¶ 47). Mr. Bohannon testifies that Holman’s “prism sheets 58 and 60 are not BEFs” and that “Holman differentiates between prisms sheets and BEFs.” Ex. 2001 ¶ 46 (citing Ex. 1006, 120). Mr. Bohannon also testifies “Mok specifically teaches away from [Petitioner’s] reasoning as Mok states ‘[g]enerally speaking, ***larger spaced-distances 48 will improve the uniformity of the light produced by the panel, but at the expense of panel thickness and some loss of efficiency.***” *Id.* ¶ 47 (citing Ex. 1005 ¶ 23).

We preliminarily find that Patent Owner’s dispute and Mr. Bohannon’s testimony regarding Petitioner’s alternative theory is not consistent with the cited teaching and we, therefore, preliminarily do not credit Patent Owner’s argument and we preliminarily give Mr. Bohannon’s testimony little to no weight. For instance, Holman teaches “[w]hatever their origin, prism and prism-like structures develop virtual images of the light sources placed beneath them that displace as a function of the prism elevation and the prism geometry.” Ex. 1006, 121. Holman further describes that “prism sheet 7 may be one of the 90-degree offerings manufactured by

the Minnesota Mining & Manufacturing Company (3M) under the trade name BEF, as in brightness enhancement film.” *Id.* at 8–9. We also preliminarily find that Holman does not differentiate between prism sheets and BEFs. Instead, Holman explains merely that Holman’s prism sheets do not have to be cosmetically perfect because “[c]osmetic defects in prism sheets 58 and 60 cannot be directly viewed” in Holman’s system. Ex. 1006, 121.

We also preliminary find that Mok does not teach away from Petitioner’s proposed combination. We agree with Patent Owner to the extent that Mok discloses that “[g]enerally speaking, larger spaced-distances 48 will improve the uniformity of the light produced by the panel, but at the expense of panel thickness and some loss of efficiency.” Ex. 1005 ¶ 23. Mok’s description, however, continues as follows “[b]y way of example, in one embodiment, the diffuser 16 is separated from the base panel 12 by a distance 48 of about 50 millimeters (mm) or less.” *Id.* Our reviewing court has explained that “[t]he fact that [a] motivating benefit comes at the expense of another benefit . . . should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another.” *See Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000). We preliminarily find that the relative advantages (e.g., reduced panel thickness) and disadvantages (e.g., reduced light uniformity) of modifying Mok’s lighting panel to include Holman’s stacking arrangement amount to a tradeoff is a decision within the level of an ordinarily skilled artisan. Indeed, Mok acknowledges this tradeoff. *See* Ex. 1005 ¶ 23 (“Generally speaking, larger spaced-distances 48 will improve the uniformity of the light produced

by the panel, but at the expense of panel thickness and some loss of efficiency.”).

For the reasons given, we determine that Petitioner has shown sufficiently that each of Mok alone and the combination of Mok and Holman teaches element 1D for purposes of institution. We also preliminarily find Petitioner’s reasons for combining the asserted art are sufficiently persuasive for institution. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success (*see* § III.E.1) also are sufficient for purposes of institution. We preliminarily find that Petitioner’s showing is not undermined by Patent Owner’s arguments at this early stage.

f) Element 1E: “wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1E is taught by Mok’s description of “a reflector (reflective surface 50) as between a substrate, which is the base panel 12, and BEF (brightness enhancer 18).” Pet. 20 (citing Ex. 1005, Fig. 1; Ex. 1003 ¶ 91). Petitioner further argues “Holman also shows a reflector arranged between the substrate and BEF.” *Id.* at 21 (citing Ex. 1006, Fig. 8; Ex. 1003 ¶¶ 91, 120). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1E. We preliminarily find that Petitioner’s argument is supported by the cited disclosures of each of Mok and Holman. *See, e.g.*, Ex. 1005, Fig. 1; Ex. 1006, Fig. 8.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1E for purposes of institution.

g) Element 1F: “the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel; and”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1F is taught by the combined teachings of Mok and Lamb. Pet. 21–23 (citing Ex. 1003 ¶¶ 62–65, 120). First, Petitioner quotes Dr. Pattison’s testimony that a person having ordinary skill in the art would have understood that “BEFs are designed and configured” to emit “light having a first orientation and preferentially reflect[] light having a second orientation, which is different from the first orientation.” *Id.* at 22 (citing Ex. 1005 ¶¶ 15, 24; Ex. 1003 ¶¶ 62–63). Petitioner argues a person having ordinary skill in the art would have understood that “the specific BEF referenced by Mok” is designed and configured in the same manner. *Id.*

Second, Petitioner argues that Lamb “provides explicit disclosures related to the refraction and recycling of light by BEFs.” Pet. 22 (citing Ex. 1007 ¶ 35; Ex. 1003 ¶¶ 64–65). Petitioner also argues “Mok and Lamb also both teach that the BEF may be Vikuiti BEF, available from 3M Company.” *Id.* at 23 (citing Ex. 1005 ¶ 24; Ex. 1007 ¶ 35; Ex. 1003 ¶ 65). Petitioner further argues that Mok and Lamb are similar in other respects and a person having ordinary skill in the art would have found it obvious “to use the BEF disclosed in Lamb in Mok’s lighting panel because it both increases on axis light, a desirable feature recognized by Lamb and Mok, and increases efficiency by recycling light, another desirable feature of lighting panels.” *Id.* (citing Ex. 1003 ¶¶ 64–65, 120).

As discussed above (*see* § III.E.1), Petitioner provides additional reasoning to combine in the section of the Petition entitled “Motivation to

Combine Mok, Holman, and Lamb,” relying on the testimony of Dr. Pattison. More specifically, Petitioner argues a person having ordinary skill in the art would have been motivated (1) to combine Holman’s and Lamb’s teachings with Mok to improve efficiency (*id.* at 12–13 (citing, e.g., Ex. 1005 ¶ 6; Ex. 1006, 2–7; Ex. 1007 ¶ 6; Ex. 1003 ¶¶ 112, 116)); (2) to apply Lamb’s brightness enhancement film to the combination of Mok and Holman “to eliminate thick diffuser plates, provide increased brightness by recycling light, and increase the exit light’s spatial uniformity” (*id.* at 14 (citing Ex. 1007 ¶¶ 8, 35, 48; Ex. 1003 ¶ 114)); and (3) to combine Holman’s and Lamb’s teachings with Mok to improve the quality of backlighting by providing better light diffusion (*id.* at 14 (citing Ex. 1003 ¶¶ 115–119)).

Patent Owner disputes Petitioner’s arguments and evidence regarding the understanding a person having ordinary skill in the art would have had of BEFs. Prelim. Resp. 12–14. Patent Owner also disputes Petitioner’s reasoning to combine Mok and Lamb. *Id.* at 14–16. Patent Owner does not dispute Petitioner’s showing that Lamb teaches element 1F. *Id.*

Patent Owner argues contrary to Petitioner’s arguments, a person having ordinary skill in the art would have understood “there is no standard brightness enhancement film.” Prelim. Resp. 13 (citing Ex. 2001 ¶ 49). Patent Owner argues “Mok includes a BEF and the disclosure makes no reference to the BEF being capable of performing light recycling.” *Id.* Relying on the testimony of Mr. Bohannon, Patent Owner argues “the 3M product is not a brightness enhancement film because it does not recycle light.” *Id.* Mr. Bohannon testifies “based on my experience in the industry the 3M product is not a brightness enhancement film because it does not

recycle light as required of a ‘brightness enhancement film’ as claimed in the ’075 Patent.” Ex. 2001 ¶ 48.

We preliminarily credit Petitioner’s argument and Dr. Pattison’s testimony over Patent Owner’s argument and Mr. Bohannon’s testimony because we find Petitioner’s argument and Dr. Pattison’s testimony consistent with the cited teachings in the prior art, based on the record at this early juncture. Importantly, the 3M product described in Mok is also described in Lamb. Ex. 1005 ¶ 24 (“[T]he brightness enhancer 18 comprises a brightness enhance film (BEF) available from 3M and sold under the registered trademark Vikuiti®.”); Ex. 1007 ¶ 35 (“The traditional backlight 10 further includes . . . a layer of enhancement film 14 having prismatic surface structures, such as Vikuiti™ Brightness Enhancement Film BEF, available from 3M Company.”). Lamb explains that “[t]he enhancement film 14 [the 3M product] refracts light within a certain angle toward the viewer,” and that “[l]ight outside that angle is ‘recycled,’ i.e., reflected back into the backlight 10, where it travels within the system until reaching the proper angle for exiting the system.” Ex. 1007 ¶ 35. Contrary to Patent Owner’s arguments, the 3M product described in both Mok and Lamb does have two angles, one at which light is emitted and one at which light is reflected to be recycled.

Although Mr. Bohannon testifies “based on my experience in the industry the 3M product is not a brightness enhancement film because it does not recycle light as required of a ‘brightness enhancement film’ as claimed in the ’075 Patent” (Ex. 2001 ¶ 48), Mr. Bohannon’s testimony does not include citations to supporting evidence. “Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled

to little or no weight.” 37 C.F.R. § 42.65 (a). We, therefore, preliminarily find that Patent Owner’s argument and evidence fails to undermine Petitioner’s showing for limitation 1F.

Patent Owner also argues that Lamb relates to “edge lighting,” which is “incompatible” with back lighting systems, such as the one described in Mok. Prelim. Resp. 14–16 (citing Ex. 2001 ¶¶ 50–51). Patent Owner argues that Petitioner’s “combination of Mok and Lamb” would have “require[d] multiple structures to accomplish the preferential emission/reflection” and “[i]f Mok’s LED substrate is mounted on top of Lamb’s light guide 140, it will block all of that section’s light.” *Id.* at 15–16 (citing Ex. 1005, Fig. 1; Ex. 1007, Fig. 2; Ex. 2001 ¶¶ 51–52).

Patent Owner’s arguments pertain to whether Lamb’s system is compatible with a backlighting system. Patent Owner, however, does not address Lamb’s broader teaching that the 3M product already described in Mok emits light having a first orientation from the lighting panel and reflects light having a second orientation back into the lighting panel. Our reviewing court has explained that “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference,” but, “[r]ather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). That Mok describes using the 3M product as its brightness enhancer and that Lamb describes using the same 3M product as its enhancement film is a reason for combining Mok and Lamb that is sufficient for purposes of institution. Petitioner need only show that Lamb’s enhancement film would have been a “suitable option” for implementation in Mok’s lighting panel.

See Intel Corp. v. PACT XPP Schweiz AG, 61 F.4th 1373, 1381 (Fed. Cir. 2023). Accordingly, we preliminarily find that Patent Owner’s argument does not undermine Petitioner’s showing for limitation 1F.

We, therefore, determine that Petitioner has shown sufficiently that the combination of Mok and Lamb teaches element 1F for purposes of institution. We also preliminarily find Petitioner’s reasons for combining the asserted art are sufficiently persuasive for institution. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success (*see* § III.E.1) also are sufficient for purposes of institution. We preliminarily find that Petitioner’s showing is not undermined by Patent Owner’s arguments at this early stage.

h) Element 1G: “a diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the reflector sheet, the diffuser sheet and brightness enhancement film extend and are arranged parallel to the principal plane of the lighting panel”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1G is taught by Mok’s disclosure of “a diffuser sheet (diffuser 16) that is between a reflector (reflective surface 50) and BEF (brightness enhancer 18).” Pet. 23 (citing Ex. 1005 ¶ 22; Ex. 1003 ¶ 95). Petitioner argues Mok’s “Figure 1 shows those components as extending and being arranged in parallel to the principal plane of the lighting panel.” *Id.* (citing Ex. 1005, Fig. 1; Ex. 1003 ¶¶ 95, 120). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1G.

We preliminarily find that Petitioner’s argument is supported by the cited disclosures of Mok. For instance, Figure 1 of Mok is reproduced below.

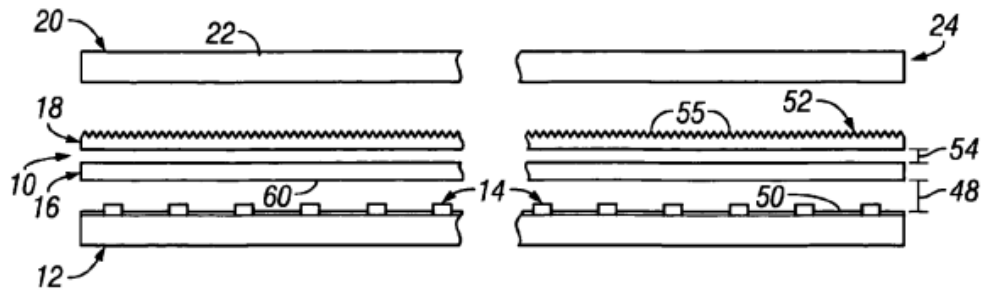


FIG. 1

Figure 1 shows a side view of light emitting panel 10, which includes base panel 12, light emitting elements 14, diffuser 16, and brightness enhancer 18. Ex. 1005 ¶¶ 10, 15. Mok describes providing reflective surface 50 on base panel 12. *Id.* ¶ 21.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1 G for purposes of institution.

i) *Conclusion—Claim 1*

After consideration of the arguments and the evidence of record at this early stage, we determine that Petitioner has shown sufficiently, for purposes of institution, that the combination of Mok, Holman, and Lamb teaches all recitations in claim 1. Also, at this juncture, we are persuaded that Petitioner has articulated sufficiently persuasive reasoning, based on the evidence of record, as to why one of ordinary skill in the art would have made Petitioner's proposed combination. Petitioner's arguments that a person having ordinary skill in the art would have had a reasonable expectation of success also are sufficient for purposes of institution. We find that Patent Owner's arguments do not undermine Petitioner's showing at this early stage.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 1 is

unpatentable under 35 U.S.C. § 103 as obvious over the combination of Mok, Holman, and Lamb.

3. *Dependent Claims 2–5, 9, 11, and 12*

Petitioner asserts that claims 2–5, 9, 11, and 12 are unpatentable as obvious over the combination of Mok, Holman, and Lamb. Pet. 24–34. Claims 2–5, 9, 11, and 12 depend from claim 1, either directly or indirectly. Petitioner provides a detailed analysis in support of its position that the combination of Mok, Holman, and Lamb teaches the limitations in these dependent claims. *See id.* Patent Owner does not separately challenge Petitioner’s analysis for these dependent claims. Having reviewed Petitioner’s arguments and evidence for these claims, we are persuaded that Petitioner’s showing for claims 2–5, 9, 11, and 12 is sufficient for purposes of institution.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claims 2–5, 9, 11, and 12 are unpatentable as obvious over the combination of Mok, Holman, and Lamb.

4. *Dependent Claim 6*

Claim 6 depends directly from claim 1 and recites “further comprising a heatsink panel on a second side of the at least one substrate opposite to the first side and configured to draw heat away from the at least one substrate in a direction opposite to a direction of light emission from the at least one substrate.” For this limitation, relying on the testimony of Dr. Pattison, Petitioner argues that “Mok . . . discloses the use of [a] printed circuit board for a base panel,” and that an ordinarily skilled artisan “would know that a printed circuit board is a heat sink, as heat is dissipated through electrical

connections and the metal base of the printed circuit board.” Pet. 28 (citing Ex. 1005 ¶ 19; Ex. 1003 ¶ 106).

Petitioner adds that “heat sinks were well known in the art.” *Id.* at 29. As support, Petitioner argues that “Holman mentions a need for ‘adequate heat sinking,’” and that “Holman describes a base layer 220 that functions as part of a heat sink.” *Id.* (citing Ex. 1006, 30, 39). Petitioner further asserts that Holman’s “LEDs 70 are mounted to the base layer 220,” that “[l]ight is emitted from the LEDs 70 in a direction away from the base layer 220,” and that “the base layer draws heat away from the LEDs 70 in the direction opposite the direction of light emission.” *Id.* (citing Ex. 1006, Figs. 7, 13). According to Petitioner, an ordinarily skilled artisan “would understand that a base layer that is a heat sink could be easily modified so that a heat sink panel was on one side of the base layer as the purpose of a heat sink is to draw heat away from heat sensitive components, such as light emitting devices.” *Id.* (citing Ex. 1003 ¶ 107). Relying on the testimony of Dr. Pattison, Petitioner also argues a person having ordinary skill in the art would have been motivated to apply Holman’s teachings of a heatsink panel to Mok “to improve cooling and efficient operation of LEDs.” *Id.* at 14 (citing Ex. 1003 ¶ 113).

With respect to Petitioner’s reliance on Mok, Patent Owner responds that Mok’s printed circuit board is not a heatsink because it “does not penetrate the substrate,” and “[i]t is not designed, intended or functional to draw heat away from the LEDs without substantially more than being simply a printed circuit board.” Prelim. Resp. 17. At this stage in the proceeding, we preliminarily find that Petitioner has not sufficiently shown that a printed circuit board is a heatsink. Although heat may be dissipated through

electrical connections and the metal base of a printed circuit board, Petitioner does not explain how such heat dissipation teaches “draw[ing] heat away from the at least one substrate in a direction opposite to a direction of light emission from the at least one substrate,” as required by claim 6.

As to Petitioner’s reliance on Holman, Patent Owner asserts that “Holman does not teach or suggest that the base layer is considered by itself a heatsink panel on a second side of the at least one substrate.” Prelim. Resp. 17. Patent Owner points to where Holman teaches that its base layer 220 is “electrically-insulating,” and further asserts that “[e]lectrically insulating materials are generally not advantageous for heat sinking because they do not conduct heat any better than they conduct electricity.” *Id.* at 17–18. Patent Owner adds that even if base layer 220 were to function as a heat sink, “Holman discloses moving heat from the LEDs to the substrate, not away from the substrate or the sensitive display components which they light.” *Id.* at 18.

Patent Owner relies on the declaration testimony of Mr. Bohannon. *Id.* at 17–18 (citing Ex. 2001 ¶¶ 53, 55). Mr. Bohannon testifies “Holman does not teach or suggest that the base layer is considered by itself a heatsink panel.” Ex. 2001 ¶ 54. Mr. Bohannon’s testimony quotes Holman’s teaching that “[t]he individual LEDs 70 are mounted flip-chip ... on composite, electrically-insulating, reflective base layers 220 and 225.” Ex. 2001 ¶ 55 (citing Ex. 1006, 37). Mr. Bohannon testifies “[e]lectrically insulating materials are generally not advantageous for heat sinking because they do not conduct heat any better than they conduct electricity.” *Id.*

Holman teaches

The base layer 220 is made of any material that can be molded, cast, or embossed, and that has or is given the appropriate mechanical, thermal, and optical properties. Typically, this means a polymer that has been loaded with a ceramic, glass or metal powder, forming a composite that can withstand the heat dissipated at the LED junction, and into the deposited metal interconnects 224 and vias 226. ... Not only must the base layer material be thermally stable, it must be counted on to service as part of the *collective heat sink*.

Ex. 1006, 39 (emphasis added). Holman also describes facilitating “removal of heat through the vias 226 and electrical interconnects 224.” *Id.* at 38–39. At this early juncture, we decline to make further findings as to whether Holman’s base layer 200 that serves “as part of the collective heat sink” (*id.* at 39) teaches “a heatsink panel” recited in claim 6.

The ’835 patent challenged in the 1168 IPR is related to the ’075 patent challenged here. Claim 14 of the ’835 patent includes a recitation that is similar to the recitation in claim 6 of the ’075 disputed in this proceeding. Petitioner presents the same ground of unpatentability arguing that claim 14 of the ’835 patent would have been obvious over Mok, Holman, and Lamb. 1168 IPR, Paper 1, 4, 34–35. The citations in the petition filed in the 1168 IPR differ from the citations in the instant proceeding. In particular, the 1168 IPR petition includes a citation to paragraph 126 of Dr. Pattison’s declaration testimony. *Id.* at 34–35 (citing, e.g., 1168 IPR Ex. 1003 ¶¶ 126, 139). Paragraph 126 of Dr. Pattison’s Declaration in the 1168 IPR includes testimony regarding Epstein. In contrast, in the instant proceeding, Petitioner cites to only paragraphs 106, 107, and 120 of Dr. Pattison’s Declaration. Pet. 28–29. At the preliminary stage, therefore, our findings and conclusions differ from those set forth in the Decision to Institute in the 1168 IPR. *See* 1168 IPR, Paper 7, 35–37.

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '075 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Indeed, Patent Owner does not separately challenge Petitioner's showing for obviousness of claim 6 over Epstein, Holman, and Lamb.

Prelim. Resp. 27. For the reasons given below, we find Petitioner's showing that claim 6 would have been obvious over Epstein, Holman, and Lamb sufficient for purposes of institution. *See* § III.F.3. At this stage of the proceeding, therefore, we need not provide a conclusion for claim 6 and obviousness over Mok, Holman, and Lamb.

5. *Dependent Claim 7*

Claim 7 depends directly from claim 1 and recites “wherein the diffuser sheet is in direct contact with the reflector sheet and the brightness enhancement film.” Petitioner argues “Mok explicitly discloses a diffuser sheet in direct contact with a BEF.” Pet. 29 (citing Ex. 1005 ¶ 25; Ex. 1003 ¶ 96). At this stage in the proceeding, Patent Owner does not dispute Petitioner's argument in that regard. Prelim. Resp. 18–19.

Petitioner also argues “[w]ith respect to direct contact between the reflector sheet and the diffuser sheet, . . . Mok describes a diffuser 16 and a reflective surface 50.” Pet. 30 (citing Ex. 1005 ¶¶ 21, 23). Petitioner argues that a person having ordinary skill in the art would have recognized that “the distance between diffuser 16 and base panel 12 on which the reflective surface is mounted is already less than 50 mm” and “the thickness of the reflective surface 50 is something more than 0 mm.” *Id.* Petitioner argues a person having ordinary skill in the art would have recognized “the distance between the reflective surface 50 in Mok and the diffuser 16 could be

reduced so that the diffuser 16 directly contacts the reflective surface 50” and would have been motivated to “make this modification in order to create a thinner and more efficient display, as Mok expressly teaches.” *Id.* at 31 (citing Ex. 1005 ¶ 23; Ex. 1003 ¶¶ 98, 120). Petitioner relies on the testimony of Dr. Pattison. *Id.* at 29–31 (citing Ex. 1003 ¶¶ 96, 98, 120).

Patent Owner argues that Petitioner’s characterization of Mok’s teaching of reducing the distance between diffuser 16 and reflective surface 50 is not correct. Prelim. Resp. 19. Relying on the testimony of Mr. Bohannon, Patent Owner argues “rather than teaching reducing the distance 48 between reflective surface 50 and diffuser 16 such that they are in contact, Mok recognizes that the spacing between the reflective surface and diffuser is a necessary and unavoidable part of the design described therein.” *Id.* (citing Ex. 2001 ¶ 56).

Mr. Bohannon’s testimony cites as supporting evidence Mok’s teaching “that: ‘[g]enerally speaking, larger spaced-distances 48 will improve the uniformity of the light produced by the panel, but at the expense of panel thickness and some loss of efficiency.’” Ex. 2001 ¶ 56 (citing Ex. 1005 ¶ 23). Mr. Bohannon testifies that “[i]t is my understanding based on the disclosure, Mok is teaching that spacing between the reflective surface and diffuser is a necessary and unavoidable part of the design described in Mok rather than teaching reducing the distance 48 between reflective surface 50 and diffuser 16 such that they are in contact.” *Id.*

At this stage, we preliminarily find that Mr. Bohannon’s testimony does not address the complete cited disclosure in Mok. In particular, Mok more fully states “[g]enerally speaking, larger spaced-distances 48 will improve the uniformity of the light produced by the panel, *but at the expense*

of panel thickness and some loss of efficiency.” Ex. 1005 ¶ 23 (emphasis added). Additionally, Mok describes that “the diffuser 16 is separated from the base panel 12 by a distance 48 of about 50 millimeters (mm) *or less.*” *Id.* ¶ 23 (emphasis added).

At this stage, we also preliminarily find that Petitioner’s argument does not fully address Mok’s Figure 1. Although Petitioner argues that a person having ordinary skill in the art would have recognized that “the distance between diffuser 16 and base panel 12 on which the reflective surface is mounted is already less than 50 mm” and “the thickness of the reflective surface 50 is something more than 0 mm” (Pet. 30 (citing, e.g., Ex. 1005 ¶¶ 21, 23), Petitioner does not address the height of light emitting elements 14. Figure 1 of Mok is reproduced below.

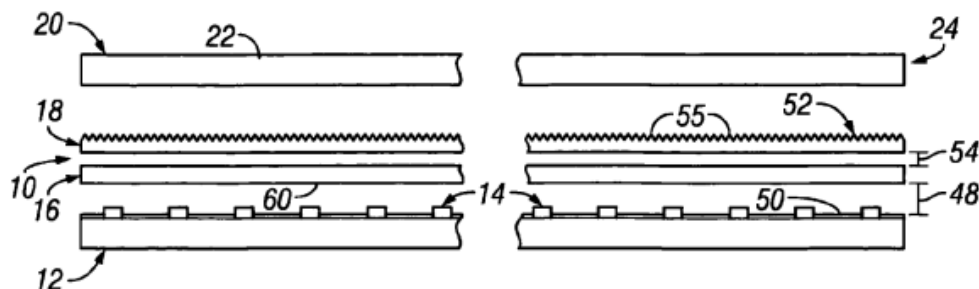


FIG. 1

Figure 1 shows a side view of light emitting panel 10, which includes base panel 12, light emitting elements 14, diffuser 16, and brightness enhancer 18. Ex. 1005 ¶¶ 10, 15. Mok describes providing reflective surface 50 on base panel 12. *Id.* ¶ 21. As illustrated in Figure 2, light emitting elements 14 appear to be slightly higher than reflective surface 50.

As discussed above with respect to claim construction, we preliminarily determine that the term “direct contact” excludes intervening elements and air gaps between layers. *See* § III.C.2. We preliminarily find

that although minimizing distance 48 between reflective coating 50 and diffuser 16 could be achieved, eliminating that distance is impacted by the height of light emitting elements 14 relative to the high of reflective coating 50.

In its discussion of claim 7, Petitioner does not refer expressly to Holman or Lamb. Pet. 29–31. Petitioner’s discussion of claim 7, however, does include an express argument that a person having ordinary skill in the art would have made Petitioner’s proposed modification “to create a thinner and more efficient display.” *Id.* at 31 (citing Ex. 1005 ¶ 23; Ex. 1003 ¶¶ 98, 120). The discussion in the section entitled “Motivation to Combine Mok, Holman, and Lamb” (*id.* at 11–14) includes Petitioner’s arguments that a person having ordinary skill in the art would have been motivated to combine Holman’s and Lamb’s teachings with Mok to improve efficiency (*id.* at 12–13 (citing, e.g., Ex. 1005 ¶ 6; Ex. 1006, 2–5; Ex. 1007 ¶ 6; Ex. 1003 ¶¶ 112, 116)) and to combine Holman’s teachings with Mok to allow “for a thinner light panel while maintaining light uniformity” (*id.* at 13 (citing Ex. 1006, 15; Ex. 1003 ¶ 113)).

We preliminarily find that Holman provides evidentiary support for Petitioner’s argument that a person having ordinary skill in the art would have been motivated “to create a thinner and more efficient display.” *Id.* at 11–14, 31. In particular, Holman teaches that “LCD applications require the highest possible brightness combined with the thinnest possible packaging.” Ex. 1006, 2. Holman also teaches that “efficient and homogeneous rear illumination for such images as those represented by LCD screens” would have been understood to be an improvement. *Id.* Holman also describes as an “advantage” making display that is “significantly thinner.” *Id.* at 15. We

decline to provide further findings at this stage regarding the parties' dispute.

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '075 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). At this stage of the proceeding, therefore, we need not provide a conclusion for every claim and every challenge raised by Petitioner. The dispute as to whether Petitioner has shown that dependent claim 7 would have been obvious over Mok, Holman, and Lamb, in our view, is best left for trial after full development of the record.

6. *Dependent Claim 10*

Claim 10 depends directly from claim 5 and further recites “wherein the brightness enhancement film is configured to limit direct emission from the lighting panel of light emitted by the plurality of solid state light emitting devices to thereby encourage light recycling/diffusion in the lighting panel.” Petitioner argues “Mok discloses a BEF, which a POSITA would understand limits direct emission.” Pet. 32 Petitioner also argues “Lamb expressly discloses recycling enhancement structures 112 and 114, which are BEFs.” *Id.* at 32–33 (citing Ex. 1007 ¶¶ 42, 44, 45). Petitioner further argues re recited functions “are standard functions of BEFs.” *Id.* at 33 (citing Ex. 1003 ¶¶ 84–85, 120).

Patent Owner argues that it relies on previous arguments that Mok “does not describe a BEF that preferentially emits light having a certain incident angle.” Prelim. Resp. 20 (citing Ex. 2001 ¶ 57). Patent Owner argues Mok merely describes “reorientation of the light to be more normal to the surface of the display, not recycling the light.” *Id.*

Patent Owner's argument and Mr. Bohannon's testimony do not dispute that Lamb teaches the dependent claim 10. Contrary to Patent Owner's argument and Mr. Bohannon's testimony, Petitioner relies on the combination of Mok and Lamb.

As discussed above (*see* III.E.2.g), Mok teaches that its "brightness enhancer 18 comprises a brightness enhance film (BEF) available from 3M and sold under the registered trademark Vikuiti®." Ex. 1005 ¶ 24. Lamb describes the same 3M product as "redirecting and recycling light to increase on-axis brightness of the backlight 100 by refracting toward the viewer light within a certain angle and reflecting back light outside that angle." Ex. 1007 ¶ 45. For the reasons given above, we preliminarily find that Petitioner has provided sufficient reasoning to make its proposed combination and Patent Owner's argument does not undermine Petitioner's showing. *See* III.E.2.g.

After consideration of the arguments and the evidence of record at this early stage, we determine that Petitioner has shown sufficiently, for purposes of institution, that the combination of Mok, Holman, and Lamb teaches all recitations in claim 10. Also, at this juncture, we are persuaded that Petitioner has articulated sufficiently persuasive reasoning, based on the evidence of record, as to why one of ordinary skill in the art would have made Petitioner's proposed combination. Petitioner's arguments that a person having ordinary skill in the art would have had a reasonable expectation of success also are sufficient for purposes of institution. We find that Patent Owner's arguments do not undermine Petitioner's showing at this early stage.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 10 is

unpatentable under 35 U.S.C. § 103 as obvious over the combination of Mok, Holman, and Lamb.

F. Asserted Obviousness over Epstein, Holman, and Lamb

Petitioner asserts that claims 1–7 and 9–12 are unpatentable as obvious over the combination of Epstein, Holman, and Lamb. Pet. 4. Patent Owner disputes Petitioner’s showing for claims 1, 7, 9, and 10. Prelim. Resp. 20–27.

1. Reasoning to Combine

The Petition includes a section entitled “Motivation to Combine Epstein, Holman, and Lamb” that appears to pertain to all challenged claims. Pet. 34–36. Petitioner argues each of Epstein, Holman, and Lamb are in the same field of endeavor and a person having ordinary skill in the art would have had a reasonable expectation of success in making Petitioner’s proposed combinations. Pet. 34 (citing Ex. 1003 ¶ 123). Relying on the testimony of Dr. Pattison, Petitioner argues a person having ordinary skill in the art would have been motivated (1) to combine Holman’s and Lamb’s teachings with Epstein to improve efficiency (*id.* at 35 (citing, e.g., Ex. 1008 ¶ 121; Ex. 1006, 2; Ex. 1007 ¶ 6; Ex. 1003 ¶ 124)); (2) to combine Holman’s teachings with Epstein to allow “for a thinner panel while maintaining light uniformity” (*id.* at 35 (citing Ex. 1006, 15; Ex. 1003 ¶ 127)); (3) to apply Lamb’s brightness enhancement film to the combination of Epstein and Holman “to eliminate thick diffuser plates, provide increased brightness by recycling light, and increase the exit light’s spatial uniformity” (*id.* at 35–36 (citing Ex. 1007 ¶¶ 8, 35, 48; Ex. 1003 ¶ 127); and (4) to combine Holman’s and Lamb’s teachings with Epstein to improve the quality of backlighting by providing better light diffusion (*id.* at 36 (citing Ex. 1003 ¶¶ 123–125)).

Petitioner provides additional reasons in its element-by-element analysis of the challenged claims. *Id.* at 36–51.

Patent Owner argues that a person having ordinary skill in the art would not have been motivated to apply Lamb’s teachings to the combination of Epstein and Holman because Lamb teaches “[a] double stack of edge lit backlights with CCFLs instead of rear mounted LEDs like those used in Epstein and Holman.” Prelim. Resp. 21 (citing, e.g., Ex. 2001 ¶ 59). We discuss the disputes between the parties below in our discussion of Petitioner’s element-by-element analysis.

2. *Independent Claim 1*

Petitioner provides a detailed analysis, which we preliminarily find shows where each of the limitations of claim 1 is taught in the asserted prior art. Patent Owner disputes Petitioner’s showing for limitations 1D and 1F. The parties’ arguments and evidence are addressed below.

a) *Preamble: “[a] lighting panel”*

Relying on the testimony of Dr. Pattison, Petitioner argues Epstein discloses the preamble. Pet. 36 (citing Ex. 1008, code (57); Ex. 1003 ¶ 43).⁸ At this early stage, Patent Owner does not dispute Petitioner’s showing for the preamble. We preliminarily find Petitioner’s argument supported by Epstein’s disclosure of a “light emitting diode (LED) array” that “comprises an array of LEDs mounted to a substrate” and an “optical sheet” that “is disposed over the LEDs.” Ex. 1008, code (57). We also preliminarily find Petitioner’s argument supported by Epstein’s disclosures relating to a lighting panel and a cross-section through a portion of a lighting unit

⁸ We take no position at this stage on whether the preamble is limiting.

described in connection with Figures 4A and 6. *See, e.g., id.* ¶¶ 14, 17, 46; Figs. 4A, 6.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches the preamble for purposes of institution.

b) Element 1A: “at least one substrate having a first side parallel to a principal plane of the lighting panel”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1A is taught by Epstein’s disclosure that “the “lighting unit 400 comprises a substrate 408 on which are arrayed a number of LEDs 420.” Pet. 37 (citing Ex. 1008 ¶ 46, Fig. 4A; Ex. 1003 ¶¶ 43–44). We preliminarily find Petitioner’s argument supported by Epstein’s disclosure of “an LED 620” that “is disposed on a substrate 608.” Ex. 1008 ¶ 67 (cited by Pet. 38, 43). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1A.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1A for purposes of institution.

c) Element 1B: “a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1B is taught by “lighting unit 400 that comprises a number of LEDs 420 that emit light and are arrayed on a first side of a substrate 408.” Pet. 37 (citing Ex. 1008 ¶ 046; Ex. 1003 ¶¶ 43–44, 129). Dr. Pattison testifies that a person having ordinary skill in the art would have recognized that “LEDs are solid state lighting devices.” Ex. 1003 ¶ 44. At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1B. We

preliminarily find that Petitioner’s argument is supported by the cited disclosures of Epstein and Dr. Pattison’s testimony.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1B for purposes of institution.

d) Element 1C: “a reflector sheet on the first side of the at least one substrate”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1C is taught by Epstein’s disclosure of “an intermediate layer 422 (and related embodiment intermediate layer 622 of FIG. 6) that may be a reflector for light at the wavelength emitted by the LED 420 (or LED 620).” Pet. 38 (citing Ex. 1008 ¶¶ 48, 67, Fig. 6; Ex. 1003 ¶¶ 49–50, 129). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1C. We preliminarily find that Petitioner’s argument is supported by the cited disclosures of Epstein. *See, e.g.*, Ex. 1008 ¶ 48 (describing that “intermediate layer 422 may comprise, for example, a multi-layer polymer reflective film,” “a white diffuse reflector,” or “some other type of reflector”), ¶ 67 (describing that “intermediate layer 622 ... may be a reflecting film”).

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1C for purposes of institution.

e) Element 1D: “a brightness enhancement film on the reflector sheet”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1D is taught by Epstein alone or in combination with Holman. Pet. 38–40 (citing Ex. 1003 ¶¶ 67–72). For Epstein alone, Petitioner relies on Epstein’s description of “the use of BEFs 662 and 664,” Epstein’s statement “that ‘one or more brightness enhancing films, available from 3M Company,

St. Paul, Minn., under the trade name BEF, may be used to direct the light more in a direction perpendicular to the substrate 608,” and Epstein’s description of “the physical relationship” between the various layers of a lighting unit. *Id.* at 38–39 (citing Ex. 1008 ¶ 74, Fig. 6). Petitioner also relies on Epstein’s description of “an array of light extraction elements 424 associated with each LED 420.” *Id.* (citing Ex. 1008, Fig. 4A).

Petitioner alternatively argues “[t]o the extent” Epstein does not teach “a BEF ‘on’ the reflector,” Holman “explicitly” discloses “a direct or stacked arrangement.” *Id.* at 40 (citing Ex. 1006, 7–10, 36–37). Petitioner argues a person having ordinary skill in the art “would have been motivated to use Holman’s stacked arrangement of layers in Epstein’s embodiments for the reasons discussed above, including that efficient lighting panels having thin dimensions” would have been understood to be “a desirable feature.” *Id.* at 40.

Patent Owner argues “Epstein’s BEF is not ‘on’ the reflector within the meaning of the ’075 patent.” Prelim. Resp. 21 (citing Ex. 2001 ¶ 60). Patent Owner argues “[a]s shown in Epstein Fig. 11, there is an air gap between BEF 662 and guiding layer 610.” *Id.* Mr. Bohannon testifies that Epstein does not disclose element 1D because Epstein’s “BEF is not directly on the intermediate layer 610 and the layers presented in Epstein are not stacked in direct contact.” Ex. 2001 ¶ 60. Patent Owner’s arguments and Mr. Bohannon’s testimony disputing Petitioner’s showing that Epstein alone teaches element 1D are premised on Patent Owner’s proposed construction, which we decline to adopt for the reasons given. *See* § III.C.1.

We preliminarily find that Petitioner’s argument that Epstein alone teaches element 1D is supported by the cited disclosures of Epstein. *See*,

e.g., Ex. 1008 ¶ 74 (describing using “one layer of brightness enhancing film 662” and that a “second additional layer of brightness enhancing film 664 may optionally be used”), Fig. 11 (illustrating BEFs 662 and 664 stacked over intermediate layer 622, which may be a reflecting film). Consistent with element 1G, Figure 11 of Epstein illustrates guiding layer 610 between intermediate layer 622 and BEF 662. *Id.* at Fig. 11. Additionally, we preliminarily find that Petitioner’s argument that Epstein alone teaches element 1D is supported by Epstein’s teaching of using “one or more brightness enhancing films, available from 3M Company, St. Paul, Minn., under the trade name BEF™.” *Id.* ¶ 74.

Patent Owner also disputes Petitioner’s alternative theory by referring to its dispute for the first ground of obviousness over Mok, Homan, and Lamb. Prelim. Resp. 22. We preliminarily find that Patent Owner’s dispute and Mr. Bohannon’s testimony regarding Petitioner’s alternative theory does not undermine Petitioner’s showing for the same reason given above. *See* § III.E.1.e.

For the reasons given, we determine that Petitioner has shown sufficiently that each of Epstein alone and the combination of Epstein and Holman teaches element 1D for purposes of institution. We also preliminarily find Petitioner’s reasons for combining the asserted art are sufficiently persuasive for institution. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success (*see* § III.F.1) also are sufficient for purposes of institution. We preliminarily find that Petitioner’s showing is not undermined by Patent Owner’s arguments at this early stage.

f) Element 1E: “wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1E is taught by Epstein’s teaching that “reflector 622 is positioned between the BEFs 662 and 664 and the substrate 608.” Pet. 40 (citing Ex. 1008, Figs. 4A, 11; Ex. 1003 ¶¶ 93, 129). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1E.

We preliminarily find that Petitioner’s argument is supported by the cited disclosures of Epstein. We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1E for purposes of institution.

g) Element 1F: “the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel; and”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1F is taught by Epstein. In particular, Petitioner argues

Epstein discloses that “a light emitting element that uses a diffractive light extraction element 636 emits light from the guiding layer 610 in a first direction relative to the axis 660. The light 667 is refracted upon exiting the first brightness enhancing layer 662 in a second direction that is closer to the axis 666 than the first direction.” Epstein, [0074]; Ex. 1003, ¶73. The intermediate layer 622 may be a reflector that causes some depolarization so that the light reflected may be recycled and passed through a reflective polarizer, in addition to stating that “light 667 is refracted upon exiting the first brightness enhancing layer 662 in a second direction that is closer to the axis 666 than the first direction.” Epstein, [0074] and [0076]; Ex. 1003, ¶73; ¶129, Claim 1F.

Pet. 41.

In the section of the Petition entitled “Motivation to Combine Epstein, Holman, and Lamb,” relying on the testimony of Dr. Pattison, Petitioner argues a person having ordinary skill in the art “would have been motivated to modify the lighting system described in Epstein to include ... Lamb’s express functionality for the disclosed BEF.” Pet. 34 (citing Ex. 1003 ¶ 122). As discussed above (*see* § III.F.1), Petitioner also provides reasoning to combine in that section, relying on the testimony of Dr. Pattison. More specifically, Petitioner argues a person having ordinary skill in the art would have been motivated (1) to combine Holman’s and Lamb’s teachings with Epstein to improve efficiency (*id.* at 35 (citing, e.g., Ex. 1008 ¶ 121; Ex. 1006, 2; Ex. 1007 ¶ 6; Ex. 1003 ¶ 124)); (2) to apply Lamb’s brightness enhancement film to the combination of Epstein and Holman “to eliminate thick diffuser plates, provide increased brightness by recycling light, and increase the exit light’s spatial uniformity” (*id.* at 35–36 (citing Ex. 1007 ¶¶ 8, 35, 48; Ex. 1003 ¶ 127); and (3) to combine Holman’s and Lamb’s teachings with Epstein to improve the quality of backlighting by providing better light diffusion (*id.* at 36 (citing Ex. 1003 ¶¶ 123–125)).

Patent Owner disputes Petitioner’s reasoning to combine Epstein and Lamb and argues Epstein alone does not teach element 1F. Regarding Petitioner’s reasoning to combine, Patent Owner argues that a person having ordinary skill in the art would not have been motivated to apply Lamb’s teachings to the combination of Epstein and Holman because Lamb teaches “[a] double stack of edge lit backlights with CCFLs instead of rear mounted LEDs like those used in Epstein and Holman.” Prelim. Resp. 21 (citing, e.g.,

Ex. 2001 ¶ 59). Patent Owner does not dispute Petitioner’s showing that Lamb teaches element 1F.

Patent Owner’s argument is unavailing. Petitioner directs us to where Lamb describes the “traditional backlight 10 further includes ... a layer of enhancement film 14 having prismatic surface structures, such as Vikuiti™ Brightness Enhancement Film BEF, available from 3M Company.” Ex. 1007 ¶ 35 (cited by Pet. 35–36)). That is the same 3M product described in Epstein. Ex. 1008 ¶ 74 (“[O]ne or more brightness enhancing films, available from 3M Company, St. Paul, Minn., under the trade name BEF™, may be used to direct the light more in a direction perpendicular to the substrate 608.”).

Patent Owner’s argument pertains to differences between Lamb’s system and rear-mounted LED systems. Patent Owner, however, does not address Lamb’s broader teaching that the 3M product described in Epstein emits light having a first orientation from the lighting panel and reflects light having a second orientation back into the lighting panel. Ex. 1008 ¶ 74 (describing as exemplary brightness enhancement films available from 3M Company); Ex. 1007 ¶ 35 (describing that the exemplary enhancement film available from 3M Company “refracts light within a certain angle toward the viewer” and “[l]ight outside that angle is ‘recycled,’ i.e., reflected back into the backlight 10”). Our reviewing court has explained that “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference,” but, “[r]ather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *Keller*, 642 F.2d at 425. That Epstein describes using the 3M product as its brightness enhancer and

that Lamb describes using the same 3M product as its enhancement film is a reason for combining Mok and Lamb that is sufficient for purposes of institution. Petitioner need only show that Lamb’s enhancement film would have been a “suitable option” for implementation in Mok’s lighting panel. *See Intel*, 61 F.4th at 1381.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1F for purposes of institution. We also preliminarily find Petitioner’s reasons for combining the asserted art are sufficiently persuasive for institution. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success (*see* § III.F.1) also are sufficient for purposes of institution. We preliminarily find that Petitioner’s showing is not undermined by Patent Owner’s arguments at this early stage.

h) Element 1G: “a diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the reflector sheet, the diffuser sheet and brightness enhancement film extend and are arranged parallel to the principal plane of the lighting panel”

Relying on the testimony of Dr. Pattison, Petitioner argues that element 1G is taught by Epstein’s disclosure of a guiding layer. Pet. 42–43 (citing, e.g., Ex. 1008 ¶¶ 66, 84; Ex. 1003 ¶ 100). Petitioner argues “[a]s shown in Figure 11, the guiding layer 610 (i.e., the diffuser) is positioned between the reflector sheet 622 and the BEFs 662 and 664.” *Id.* at 43–44 (citing, e.g., Ex. 1008 ¶¶ 68, 74, Fig. 11; Ex. 1003 ¶¶ 101–103). At this early stage, Patent Owner does not dispute Petitioner’s showing for element 1G.

We preliminarily find that Petitioner’s argument is supported by the cited disclosures of Epstein. *See, e.g.*, Ex. 1008 ¶ 66 (describing that the guiding layer “spread[s] the light”), ¶ 84 (describing that a “volume diffuser

may be located within guiding layer 610”). Figure 11 of Epstein illustrates that guiding layer 610 is between brightness enhancement film 662 and intermediate layer 622.

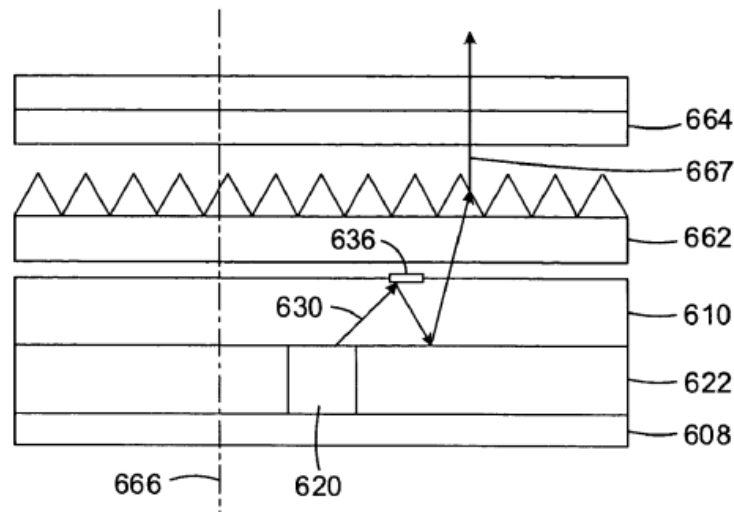


FIG. 11

Figure 11, above, shows a light emitting element. *Id.* ¶ 23. The light emitting element includes substrate 608, LED 620, intermediate layer 622, guiding layer 610, diffractive light extraction element 636, first brightness enhancing film 662, and second brightness enhancing film 664. *Id.* ¶¶ 67, 74. Intermediate layer 622 may be a reflecting film. *Id.* ¶ 67.

We, therefore, determine that Petitioner has shown sufficiently that the asserted art teaches element 1G for purposes of institution.

i) Conclusion—Claim 1

After consideration of the arguments and the evidence of record at this early stage, we determine that Petitioner has shown sufficiently, for purposes of institution, that the combination of Epstein, Holman, and Lamb teaches all recitations in claim 1. Also, at this juncture, we are persuaded that Petitioner has articulated sufficiently persuasive reasoning, based on the

evidence of record, as to why one of ordinary skill in the art would have made Petitioner's proposed combination. Petitioner's arguments that a person having ordinary skill in the art would have had a reasonable expectation of success also are sufficient for purposes of institution. We find that Patent Owner's arguments do not undermine Petitioner's showing at this early stage.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Epstein, Holman, and Lamb.

3. *Dependent Claims 2–6, 11, and 12*

Petitioner asserts that claims 2–6, 11, and 12 are unpatentable as obvious over the combination of Epstein, Holman, and Lamb. Pet. 44–51. Claims 2–6, 11, and 12 depend from claim 1, either directly or indirectly. Petitioner provides a detailed analysis in support of its position that the combination of Epstein, Holman, and Lamb teaches the limitations in these dependent claims. *See id.* Patent Owner does not separately challenge Petitioner's analysis for these dependent claims. Having reviewed Petitioner's arguments and evidence for these claims, we are persuaded that Petitioner's showing for claims 2–6, 11, and 12 is sufficient for purposes of institution.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claims 2–6, 11, and 12 are unpatentable as obvious over the combination of Epstein, Holman, and Lamb.

4. *Dependent Claim 7*

Claim 7 depends directly from claim 1 and recites “wherein the diffuser sheet is in direct contact with the reflector sheet and the brightness enhancement film.” Petitioner argues “Epstein describes and shows a diffuser sheet (guiding layer 610) [that] is in direct contact with the reflector sheet (intermediate layer 622).” Pet. 47 (citing Ex. 1008 ¶¶ 74–75, Fig. 11). Petitioner also argues that in Epstein “the BEF 662 is directly on top of the diffuser sheet (guiding layer 610).” *Id.* Petitioner argues “[t]o the extent that there is any intervening space between the two, it would have been obvious to a POSITA to modify the arrangement of the layers such that there was no such space, especially given the fact that Epstein recognizes a challenge with prior art systems is that they were ‘thick and bulky.’” *Id.* at 48 (citing Ex. 1008 ¶¶ 3, 123). Petitioner relies on the testimony of Dr. Pattison, which is similar to the argument in the Petition and relies on the same cited evidence. *Id.* at 47–48 (citing Ex. 1003 ¶¶ 104, 129).

Patent Owner argues “[a]s shown in Figure 11 of Epstein, there is an unambiguous space between the BEF 662 and diffuser sheet. Thus, the two are not ‘in direct contact.’” Prelim. Resp. 23. Patent Owner argues that Petitioner’s reasoning to modify Epstein is based on a mischaracterization of Epstein. *Id.* at 24–25. Patent Owner argues Epstein describes “an LED display, not a backlight for an LCD.” *Id.* at 25. Patent Owner argues “[t]he former are the kinds of systems one would observe a sports arena; a display made up entirely of LEDs of varying colors.” *Id.* Patent Owner argues the quotation of Epstein relied on by Petitioner “has nothing to do with the factors at issue in constructing a backlighting unit for an LCD display.” *Id.* Patent Owner relies on the testimony of Mr. Bohannon, which is similar to

the argument in the Petition and relies on the same cited evidence. Ex. 2001 ¶ 63.

As discussed above with respect to claim construction, we preliminarily determine that the term “direct contact” excludes intervening elements and air gaps between layers. *See* § III.C.2. We preliminarily find that Figure 11 of Epstein illustrates a space between guiding layer 610 and brightness enhancement film 662. Ex. 1008, Fig. 11. As to whether a person having ordinary skill in the art would have modified Epstein as Petitioner proposes, we preliminarily find that Epstein describes a problem with traditional manufacturing of LED arrays is that “the resulting array tile is relatively thick and bulky.” Ex. 1008 ¶ 3.

In its discussion of claim 7, Petitioner does not refer expressly to Holman or Lamb. Pet. 47–48. In the discussion in the section of the Petition titled “Motivation to Combine Epstein, Holman, and Lamb,” relying on the testimony of Dr. Pattison, Petitioner argues a person having ordinary skill in the art would have been motivated to combine Holman’s teachings with Epstein to allow “for a thinner panel while maintaining light uniformity.” *Id.* at 35 (citing Ex. 1006, 15; Ex. 1003 ¶ 127). We find that Holman provides evidentiary support for Petitioner’s reasoning to combine. In particular, Holman teaches that “LCD applications require the highest possible brightness combined with the thinnest possible packaging.” Ex. 1006, 2. Holman also teaches that “efficient and homogeneous rear illumination for such images as those represented by LCD screens” would have been understood to be an improvement. *Id.* Holman also describes as an “advantage” making a display that is “significantly thinner.” *Id.* at 15.

We decline to provide further findings at this stage regarding the parties' dispute. Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '075 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). At this stage of the proceeding, therefore, we need not provide a conclusion for every claim and every challenge raised by Petitioner. The dispute as to whether Petitioner has shown that dependent claim 7 would have been obvious over Epstein, Holman, and Lamb, in our view, is best left for trial after full development of the record.

5. *Dependent Claim 9*

Claim 9 depends directly from claim 5 and further recites “wherein the light extraction features are random features.” Petitioner argues that claim 9 would have been obvious over (1) Epstein in view of the knowledge of a person having ordinary skill in the art; and (2) the combination of Epstein and Lamb. Pet. 49 (citing, e.g., Ex. 1008 ¶¶ 74–75; Ex. 1007 ¶ 42). Petitioner argues that a person having ordinary skill in the art would have been motivated to make the proposed combination because “including random features on a BEF helps avoid interference effects.” *Id.* (quoting Ex. 1003 ¶ 81). Petitioner relies on the testimony of Dr. Pattison. Pet. 49 (citing Ex. 1003 ¶¶ 78, 80–81, 129).

Dr. Pattison testifies as follows:

Additional related prior art in peer reviewed academic literature describes the use of a random 3-d grating structure to improve brightness and uniformity of light emitted from a LCD display. The use of randomly patterned optical components was well understood to avoid the creation of moire patterns which are optical interference patterns resulting from regular optical elements acting on the light from a display. *See, e.g.*, Ex. 1015 at 6 (“By optimizing the grating pitches and orientations of RG-

LCF [Random Grating Light Control Film], the reflective light distribution can be well controlled and results in high brightness, wide viewing angle, and high uniformity images.”); at 9 (“RG-LCF [Random Grating Light Control Film], as shown in Fig. 18, which can direct light incident from multiple directions collectively for viewing, can achieve much enhanced brightness of reflective image. The grating pitches and orientations were designed properly to improve the brightness and uniformity. Additionally, the size of each grating is $25 \times 25 \mu\text{m}^2$ and the arrangement in a single pixel is randomized in order to avoid the moiré patterns and dispersion.”). Such patterns would be undesirable for display applications.

A person of ordinary skill in the art would further recognize that the LEDs in a backlight are positioned in uniform locations. Thus, including random features on a BEF helps avoid interference effects. This provides a motivation to use randomized patterns on the surface of the BEF. Further, randomized optical patterns also help to minimize optical dispersion which is the separation of colors, such as with a prism, where in a display the objective is to combine colors. This provides an additional motivation for a person of ordinary skill in the art to apply random patterns to the surface of the BEF.

Ex. 1003 ¶¶ 80–81.

Patent Owner argues that a person having ordinary skill in the art would not have been motivated to make Petitioner’s proposed combination because “adding additional light extraction components ... would only add further inefficiencies.” Prelim. Resp. 25 (citing Ex. 2001 ¶ 65). Patent Owner also characterizes the combination of Epstein and Lamb as “undesirable.” *Id.* Patent Owner relies on the testimony of Mr. Bohannon. *Id.* (citing Ex. 2001 ¶ 65). Mr. Bohannon testifies “I disagree with Dr. Pattison that it’s obvious to a POSITA to include other light extraction features, including ones ‘that randomize light’ to a combination (however that could be done) of Lamb and Epstein since adding one more light

extraction component to that mess would only add further inefficiencies.”
Ex. 2001 ¶ 65.

At this stage in the proceeding, we preliminarily find Petitioner’s argument that “light extraction features [that] are random features” were known is supported by Petitioner’s evidence. *See, e.g.*, Ex. 1015, 6 (describing that “[b]y optimizing the grating pitches and orientations of RG-LCF [Random Grating Light Control Film], the reflective light distribution can be well controlled and results in high brightness, wide viewing angle, and high uniformity images.”), 9 (describing that “RG-LCF ... can direct light incident from multiple directions collectively for viewing,” “can achieve much enhanced brightness of reflective image,” can be designed “to improve the brightness and uniformity,” and can have an “arrangement in a single pixel [that] is randomized in order to avoid the moiré patterns and dispersion”); Ex. 1008 ¶ 42 (describing that “first recycling enhancement structure 112 also includes a diffuser” and “[o]ne function of the diffuser is the randomization of the polarization and direction of the light reflected by the reflective polarizer back into the backlighting system 100”). At this early stage, Petitioner’s argument is not disputed.

Regarding the parties’ dispute relating to reasoning to combine, at this stage in the proceeding, we preliminarily credit Petitioner’s argument and Dr. Pattison’s over Patent Owner’s argument and Mr. Bohannon’s testimony because Petitioner’s argument and Dr. Pattison’s testimony is consistent with the evidence cited therein. Patent Owner relies on Mr. Bohannon’s testimony, which at this stage does not include citations to supporting evidence. Additionally, although not cited by Petitioner, Epstein appears to support Petitioner’s arguments. *See* Ex. 1008 ¶ 89 (“All types of extraction

features may be arranged in a manner that controls the intensity profile of light emitted from the light emitting element ... The extraction features may be arranged to provide a relatively uniform profile illumination profile or some other desirable profile.”).

After consideration of the arguments and the evidence of record at this early stage, we determine that Petitioner has shown sufficiently, for purposes of institution, that the combination of Epstein, Holman, and Lamb teaches all recitations in claim 9. Also, at this juncture, we are persuaded that Petitioner has articulated sufficiently persuasive reasoning, based on the evidence of record, as to why one of ordinary skill in the art would have made Petitioner’s proposed combination. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success also are sufficient for purposes of institution. We find that Patent Owner’s arguments do not undermine Petitioner’s showing at this early stage.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 9 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Epstein, Holman, and Lamb.

6. *Dependent Claim 10*

Claim 10 depends directly from claim 5 and further recites “wherein the brightness enhancement film is configured to limit direct emission from the lighting panel of light emitted by the plurality of solid state light emitting devices to thereby encourage light recycling/diffusion in the lighting panel.” Petitioner argues “Epstein describes the use of BEFs,” which a person having ordinary skill in the art would have understood “limits direct

emission.” Pet. 50 Petitioner also argues “Lamb discloses recycling enhancement structures 112 and 114, the components of which are part of its BEF.” *Id.* at 32–33, 50 (citing Ex. 1007 ¶¶ 42, 44, 45). Petitioner further argues “[i]t would have been obvious to include the features of Lamb’s brightness enhancement layers with Epstein’s disclosed structures because doing so improves the diffuse quality of light and improves light output of the display device.” *Id.* at 50 (citing Ex. 1003 ¶¶ 85, 129).

Patent Owner’s arguments are similar to those made with respect to limitation 1F. Prelim. Resp. 26 (citing Ex. 2001 ¶ 67). Patent Owner’s argument and Mr. Bohannon’s testimony do not dispute that Lamb teaches the dependent claim 10. For the reasons given above, we preliminarily find that Petitioner has provided sufficient reasoning to make its proposed combination and Patent Owner’s argument does not undermine Petitioner’s showing. *See* III.F.2.g.

After consideration of the arguments and the evidence of record at this early stage, we determine that Petitioner has shown sufficiently, for purposes of institution, that the combination of Epstein, Holman, and Lamb teaches all recitations in claim 10. Also, at this juncture, we are persuaded that Petitioner has articulated sufficiently persuasive reasoning, based on the evidence of record, as to why one of ordinary skill in the art would have made Petitioner’s proposed combination. Petitioner’s arguments that a person having ordinary skill in the art would have had a reasonable expectation of success also are sufficient for purposes of institution. We find that Patent Owner’s arguments do not undermine Petitioner’s showing at this early stage.

Accordingly, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Epstein, Holman, and Lamb.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated that there is a reasonable likelihood that it would prevail in proving the unpatentability of at least one of the challenged claims of the '075 patent. We thus institute an *inter partes* review of all of the challenged claims of the '075 patent on all grounds asserted in the Petition. *See* 37 C.F.R. § 42.108(a).

Any findings or conclusions in this Decision are made only for the purposes of institution and are not dispositive of any issue. We have not made a final determination with respect to the patentability of any challenged claim. Our final determination will be based on the record as fully developed during trial, including any evidence or argument timely presented by the parties under our Rules.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review of claims 1–7 and 9–12 of the '075 patent is hereby instituted on all grounds stated in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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