

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOMBARDIER INC.,
Petitioner,

v.

THE LITEBOOK COMPANY LTD.,
Patent Owner.

IPR2023-00192
Patent 7,678,140 B2

Before JAMES P. CALVE, BARRY L. GROSSMAN, and
GEORGE R. HOSKINS, *Administrative Patent Judges*.

CALVE, *Administrative Patent Judge*.

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

I. BACKGROUND

Bombardier Inc. (“Petitioner”) filed a petition requesting *inter partes* review of claims 1–9 (“challenged claims”) of U.S. Patent No. 7,678,140 B2 (“the ’140 patent”) (Ex. 1001). Paper 3, 1 (“Pet.”). The Litebook Company Ltd. (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022) (“The Board institutes the trial on behalf of the Director.”). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . 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 evidence and arguments in the record, we determine that the information presented shows a reasonable likelihood that Petitioner would prevail with respect to at least 1 of the challenged claims. We therefore grant institution of an *inter partes* review.

A. *Related Proceedings*

The parties identify the following proceedings involving the ’140 patent: *The Litebook Company Ltd. v. Bombardier Aerospace Corp. and NetJets Aviation, Inc.*, Case No. 4:22-cv-00615 (N.D. Tex.); *The Litebook Company Ltd. v. Verilux, Inc.*, Case No. 8:22-cv-01124 (C.D. Cal.); *The Litebook Company Ltd. v. OnePlus Technology (Shenzhen) Co., Ltd.*, Case No. 6:22-cv-00371 (W.D. Tex.); and *The Litebook Company Ltd. v. TCL Corporation et al.*, Case No. 8:21-cv-01011 (C.D. Cal). Pet. 2 (listing all four cases); Paper 4, 2 (listing only the first case); Prelim. Resp. 4; Ex. 2001.

B. Real Parties in Interest

Petitioner identifies Bombardier Inc., Bombardier Aerospace Corporation, NetJets Aviation, Inc. and Diehl Aerospace GmbH as the real parties in interest. Pet. 2. Patent Owner identifies The Litebook Company Ltd. as the real party in interest. Paper 4, 2.

C. The '140 Patent (Ex. 1001)

The '140 patent describes a light system for stimulating the circadian, neuroendocrine, and photoneural systems in mammals based on discovering a peak sensitivity of 425–505 nm. Ex. 1001, 1:26–34, 8:22–25, 8:64–9:26. An action spectrum including this range can treat light responsive disorders such as seasonal affective disorders, sleep disorders, circadian disruption, eating disorders, alert deficits, and cardiovascular disorders (*id.* at 8:44–50) due to its absorption, as depicted in Figure 11 below (*id.* at 17:64–19:59).

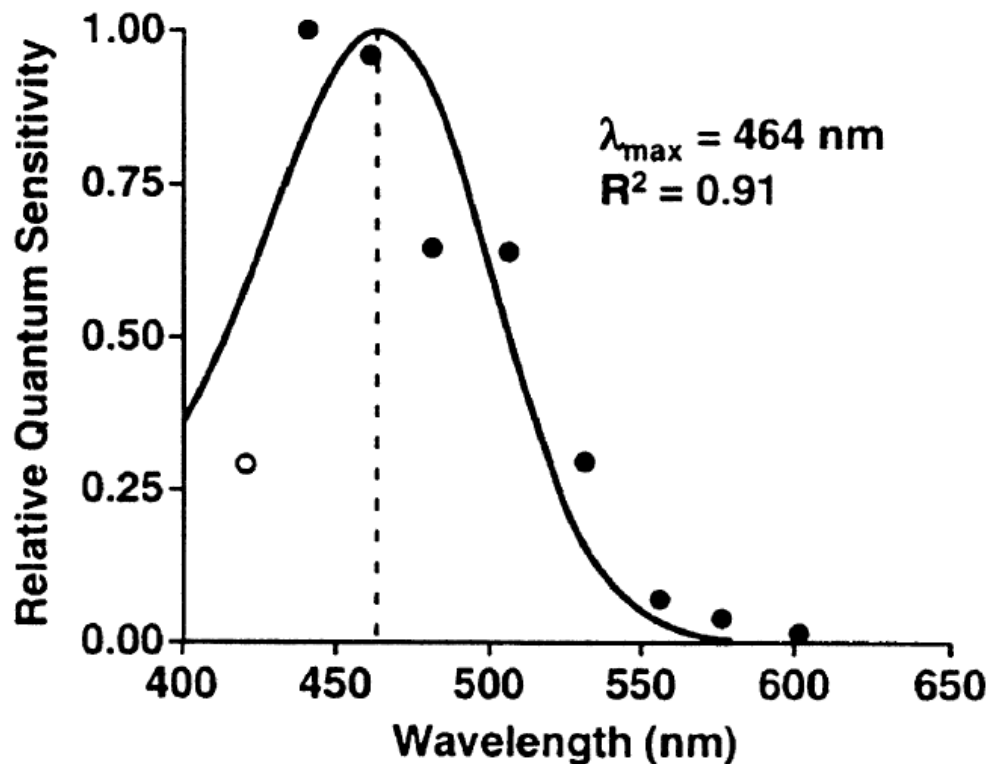


Figure 11 depicts the spectral sensitivity of vitamin A₁-retinaldehyde photopigments exposed to a pre-defined action spectrum of wavelengths of 440 nm, 460 nm, 480 nm, 505 nm, 530 nm, 555 nm, 575 nm, and 600 nm used to study the effect of light exposure on subjects. Ex. 1001, 14:27–61, 18:42–19:38. The '140 patent describes an action spectrum for melatonin suppression with a peak spectral sensitivity of around 460 nm (464 nm) and a coefficient of correlation between the data and a fitted opsin nomogram of $R^2=0.91$. *Id.* at 19:36–38. The strongest circadian input for melatonin regulation fell within a range of 446–477 nm. *Id.* at 19:20–59. These pre-defined spectral wavelengths fit with univariant fluence-response sigmoidal curves with high coefficients of correlation of 0.91, 0.95, 0.93, 0.94, 0.92, 0.90, 0.95, and 0.81, respectively. *Id.* at 18:42–67, Figs. 6–8.

According to the '140 patent, these results suggest the existence of a novel pigment in the human eye that regulates melatonin and is distinct from individual rod and cone photoreceptors used for vision. Ex. 1001, 19:50–59. The '140 patent states that the data demonstrate the wavelength sensitivity of the ocular photoreceptor system for regulating the human pineal gland using this action spectrum for light-induced melatonin with a 446–477 nm portion being the most potent wavelengths to provide circadian input for regulating melatonin secretion. *Id.* at 19:50–59, 22:11–17. The '140 patent states that these results suggest the existence of a novel retinaldehyde photopigment that mediates human circadian photoreception and can be used to optimize the use of light for therapeutic and architectural applications. *Id.* at 22:19–23; *see id.* at 20:11–15 (the high coefficient of correlation and univariance of the curves is consistent with, but does not prove, that melatonin suppression is modulated by a single photoreceptor type).

D. Challenged Claims

Petitioner challenges claims 1–9 of the '140 patent, all of the issued claims of the '140 patent. Pet. 1, 3. Claim 1 is the sole independent claim with claims 2–9 depending from claim 1. Ex. 1001, 26:7–58.

Claim 1 is reproduced below with Petitioner's annotations added to identify each limitation:

[1-pre] A method of at least treating or preventing at least one light responsive disorder in at least one mammal, said method comprising the steps of

[1a] utilizing at least one light source, said at least one light source emitting optical radiation;

[1b] causing said optical radiation to be commonly therapeutically effective in humans by employing a pre-established spectral composition that has been pre-identified as a maximally potent spectral composition in the regulation of at least one of the human circadian, photoneural, or neuroendocrine systems, said pre-established spectral composition comprising at least one enhanced spectral region comprising at least one peak of emitted light within the range of 435-488 nm;

[1c] exposing at least a portion of the retina of at least one eye of at least one mammal to said pre-established spectral composition of optical radiation such that said light source is not mounted on the body of said at least one mammal;

[1d] stimulating the photoreceptor system for at least one of the circadian, photoneural or neuroendocrine systems of said at least one mammal;

[1e] and, enabling at least the treatment or the prevention of at least one light responsive disorder in said at least one mammal.

Ex. 1001, 26:8–30.¹

¹ We adopt and apply below in our analysis Petitioner's designations for the elements of the challenged claims. See Pet. 20–39.

E. Asserted Grounds of Unpatentability

Petitioner asserts unpatentability on the following grounds (Pet. 4):

Challenged Claims	35 U.S.C. §	Reference(s)
1, 6	102 ²	Weth ³
2–5, 7–9	103(a)	Weth, Weber ⁴

Petitioner cites a Declaration of Dr. Horace Craig Heller. Ex. 1005.

II. DISCUSSION

A. Level of Ordinary Skill in the Art

Petitioner asserts persons of ordinary skill in the art would have had at least a Ph.D. or M.D. with a background in circadian biology, neuroscience, physiology, and phototherapy, or at least 5 years of professional experience in one or more of those fields. Pet. 14–15 (citing Ex. 1005 ¶¶ 38–41). Patent Owner does not propose a level of ordinary skill in the art. For this decision, we adopt Petitioner’s proposed standard. Based on the preliminary record, this level of ordinary skill appears to be consistent with the ’140 patent, the prior art of record, and Dr. Heller’s testimony. Ex. 1005 ¶¶ 38–41.

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Pub. L. No. 112-29, §§ 3(b)–3(c), 3(n)(1), 125 Stat. 284, 285–87 (2011). Because the ’140 patent has a filing date before March 16, 2013, we refer to the pre-AIA versions of §§ 102 and 103. *See* Pet. 4 n.1; Prelim. Resp. 4–5.

³ DE 20618670 U1, published Oct. 23, 1997 (certified English-language translation provided with German-language document at Ex. 1004, “Weth”).

⁴ US 6,531,230 B1, issued Mar. 11, 2003 (Ex. 1022, “Weber”).

B. Claim Interpretation

We interpret claims “using the same claim construction standard that would be used to construe the claims in a civil action held under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under this standard, we construe claims “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.” *Id.* We construe the claims only to the extent necessary to determine whether to institute *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e 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)).

Petitioner asserts that the claims should be given their plain and customary meaning as understood by a skilled artisan and reserves the right to respond to any claim construction offered by Patent Owner. Pet. 15.

Patent Owner proposes the following claim constructions:

Term	Proposed Construction
“causing said optical radiation to be commonly therapeutically effective in humans by employing a pre-established spectral composition that has been pre-identified as a maximally potent spectral composition”	“that includes light having a pre-determined spectral composition for maximizing the potency of its therapeutic effect in humans”
“in the regulation of at least one of the human circadian, photoneural, or neuroendocrine systems”	“in activating photoreceptors linked to the person’s circadian, photoneural, or neuroendocrine system to generate a response”

Prelim. Resp. 7–9.

We determine that we do not need to interpret these limitations or any other limitations beyond giving them their plain and ordinary meaning to reach our Decision at this stage. Our claim construction determination is a preliminary determination based on the current record. It does not preclude the parties from arguing proposed constructions of the claims during trial.

C. Prosecution History of the '140 Patent

The '140 patent issued from U.S. Patent Application No. 09/853,428, which was filed on May 10, 2001, claiming priority from U.S. Provisional Application Nos. 60/203,308, filed May 10, 2000, and 60/228,493, filed August 28, 2000. Ex. 1001, Codes (21), (22), (60). The original claims recited a method of treating or preventing a light responsive disorder by emitting wavelengths with a peak sensitivity of 425–505 nm. Ex. 1002, 49–52. Patent Owner amended those claims to reflect (*id.* at 281)

Applicant's surprising discovery that human melatonin suppression peaks between 435–488 nm (fig. 11) and that by exposing patients to these wavelengths, light responsive disorders can be treated. Conversely, Applicant has discovered that exposing a patient to light in which these wavelengths have been excluded minimizes circadian and neuroendocrine stimulation or disruption. . . . [I]n other words, exposing a patient to light in which these wavelengths have been excluded will allow one to fall a sleep [*sic*], while exposure to these wavelengths will stimulate wakefulness.

Appellant asserted that the prior art (Searfoss, US 5,265,598) lacked a pre-established spectral composition pre-identified as a maximally potent spectral composition to regulate human circadian physiology because it “employ[s] a spectral composition that is individually determined based on the subjective response of the specific human being treated.” *Id.* at 533–534.

D. Principles of Law

A “prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (citation omitted). “A single prior art reference may anticipate without disclosing a feature of the claimed invention if such feature is necessarily present, or inherent, in that reference.” *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 958 (Fed. Cir. 2014).

A patent claim is unpatentable under 35 U.S.C. § 103 if 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 invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. Similarly, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417.

The question of obviousness is resolved based on 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 non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Neither party presents any objective evidence of non-obviousness.

E. Ground 1: Alleged Anticipation by Weth

Petitioner asserts that claims 1 and 6 are unpatentable under 35 U.S.C. § 102 as anticipated by Weth. Pet. 4, 20–31.

1. Weth (Ex. 1004)

Weth discloses a lamp used for therapeutic purposes. Ex. 1004, 1:5–6. The lamp emits light that is very close to sunlight with spectral lines in the ultraviolet and visible light wavelength ranges. *Id.* at 1:32–36, 3:13–20.

A pre-defined spectral composition in the ultraviolet (UV) light range includes spectral lines with wavelengths of 251 nm (± 5 nm), 265 nm (± 15 nm), 290 nm (± 15 nm), 319 nm (± 15 nm), 335 nm (± 15 nm), and 368 nm (± 15 nm). Ex. 1004, 1:32–36, 19:3–7 (claim 1).

A particularly preferred embodiment of Weth's invention emits light in the visible range with spectral lines at wavelengths of 380 nm (± 15 nm), 410 nm (± 15 nm), 438 nm (± 15 nm), 490 nm (± 15 nm), 515 nm (± 15 nm), 540 nm (± 15 nm), 580 nm (± 15 nm), 610 nm (± 15 nm), 650 nm (± 15 nm), 690 nm (± 15 nm), 710 nm (± 15 nm), 740 nm (± 15 nm), 770 nm (± 15 nm), and 800 nm (± 15 nm). Ex. 1004, 3:13–20, 19:9–15 (claim 2); Ex. 1003, 2.

Both pre-defined spectral compositions correspond to absorption lines of endogenous, essential substances. Ex. 1004, 2:3–17, 3:22–4:13. Patients can avoid myocardial infarctions and strokes, strengthen the immune system, slow aging, and reduce arteriosclerosis, immunological diseases, psychoses, depressions, embolisms, and thromboses by reducing fibrinogen levels that cause many of these diseases. *Id.* at 5:19–7:18, Graph (showing fibrinogen levels for coronary artery disease reduced from 543 mg/dl before treatment with the lamp to 389 mg/dl after a four-week treatment period).

Weth describes the therapeutic lamp and its defined composition of spectral lines in the UV and visible light spectrums as “a sunlight lamp” because the light spectrum “is very close to sunlight.” Ex. 1004, 2:19–26, 18:29–32. A therapeutic lamp emitting this sunlight spectral composition for patients provides improved receptor sensitivity that leads to increased dopamine levels with vigilance increases, improved sleep quality, rectified sugar variations, saved insulin, and increased melatonin levels. *Id.* at 12:30–37. The therapeutic effect of the lamp “can be obtained purely by way of the eyes” and “is substantially more pleasant to the eye than the spectrum of conventional illuminants.” *Id.* at 5:8–11, 7:35–36. The lamp’s carrier gases provide a broad light spectrum for enhanced clinical effect. *Id.* at 18:14–19.

The lamp achieves therapeutic effects using the pre-defined sunlight spectral composition at “[l]uminous intensities that make up less than 50% of the previously used luminous intensities.” Ex. 1004, 8:2–4. Intensities of conventional lamps used for whole-body light therapy cause unpleasant side effects because they produce more than 6000 lux. *Id.* at 1:8–14.

The therapeutic sunlight lamp and its pre-defined spectral composition can prevent formation of pathological proteins of Alzheimer’s and alleviate exanthemata and psoriasis skin conditions. Ex. 1004, 7:20–29. It increases quality of life, immune systems, and tumor necrosis factors. *Id.* at 8:23–37.

The lamp reduces coagulations that cause arteriosclerosis, myocardial infarctions, and strokes by reducing fibrinogen in the body. Ex. 1004, 10:1–12:28. Vitamin D formation is promoted, and the deposit of calcium in the bones also increases. *Id.* at 13:1–12. Cholesterol levels drop, depression decreases, inflammation decreases significantly, daily activities increase, appetite is suppressed, and skin exanthema vanishes. *Id.* at 13:14–15:27.

2. Independent Claim 1: Elements [1-pre] and [1a]

Petitioner asserts that Weth's therapeutic lamp is used to treat or avoid a wide range of light responsive disorders as in element [1-pre] because it is used to treat arteriosclerosis, immune diseases, myocardial infarctions, and strokes. Pet. 20–21 (citing Ex. 1004, 1:3–6, 5:19–6:34, 8:36–9:8, 10:18–26, 19:3–7 (claim 1); Ex. 1005 ¶¶ 58–60). This contention, which Patent Owner does not contest at this stage, is supported sufficiently by evidence of record. In particular, Weth's lamp is used to treat fibrinogen levels, arteriosclerosis, immunological diseases, psychoses, depressions, myocardial infarctions, strokes, embolisms, thromboses, inflammation, cholesterol, depression, and activity levels, and strengthen the immune system and act as a prophylaxis. Ex. 1004, 1:3–6, 5:19–6:31, 8:23–9:8, 10:1–12:28, 13:1–15:38.

Petitioner asserts that Weth discloses using “at least one light source, said at least one light source emitting optical radiation” in element [1a]. Pet. 15–18 (Weth overview), 21–22 (citing Ex. 1004, 1:5–6, 1:32–36, 2:24–26, 19:3–7 (claim 1), 19:17–18 (claim 3); Ex. 1005 ¶¶ 61, 62; Pet. 5–7 (light spectrum)). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record. In particular, Weth's lamp may be used as a tabletop or ceiling lamp to provide a spectrum very close to sunlight by emitting UV and visible light spectral lines. Ex. 1004, 1:32–4:34, 17:1–18:27, Figs. 1–3. The '140 patent defines a “light source” as “artificial light, natural light, and lamps.” Ex. 1001, 8:58–60. Weth's lamp emits optical radiation as UV and visible light spectra, and “the effect can be obtained purely by way of the eyes.” Ex. 1004, 7:31–38, 1:33–36 (UV spectra 251–368 nm), 3:13–4:13 (visible spectra 380–to 800 nm); Pet. 5–7 (optical spectrum is 100–1 million nm; *visible spectrum is 400–700 nm*).

3. *Limitation [1b]*

Petitioner asserts that Weth causes optical radiation to be commonly therapeutically effective in humans in element [1b], § 1. Pet. 22–24 (citing Ex. 1004, 1:5–6, 1:32–36, 2:24–26, 2:28–29, 3:7–11, 5:1–3, 5:8–11, 6:33–38, 7:31–34, 8:10–14, 8:31–9:2, 11:12–13, 11:36–16:7, 19:3–7 (claim 1), 19:17–18 (claim 3); Ex. 1005 ¶¶ 64, 65).

Patent Owner argues that Weth describes medical therapies, but the conditions are not described as a “light responsive disorder” or part of the “human circadian, photoneural, or neuroendocrine system” as claimed. Prelim. Resp. 9–10. Patent Owner argues that Petitioner’s reliance on UV wavelengths ignores the claimed region and peak of 435–488 nm. *Id.* at 10.

The ’140 patent defines a “light responsive disorder” as
any disorder responding to or preventable by phototherapy and
includes, but is not limited to, *seasonal affective disorders*,
sleep disorders, *circadian disruption*, *eating disorders*,
menstrual cycle disorders, *non-specific alerting or performance*
deficits, hormone sensitive *cancers* (including, but not limited
to, breast cancers), and *cardiovascular disorders*.

Ex. 1001, 8:44–50 (emphasis added).

Petitioner relies on Weth’s use of UV *and* visible light spectra to treat disorders of the coagulation system, arteriosclerosis, myocardial infarction, stroke, sleep, osteoporosis metabolism, depression, exanthemata, psychosis, tumors, daily life activities, appetite, cancers, skin exanthemata, hormones, and chronic fatigue, Vitamin D, and low-density lipoprotein concentration that are seasonal affective disorders, sleep disorders, circadian disruption, hormone-sensitive cancers, alert deficits, and cardiovascular disorders. *See* Pet. 5–10, 15–18, 20–26; *see also* Ex. 1004, 2:19–26, 5:8–7:31, 8:23–16:15.

Weth provides numerous examples that the use of its lamp, which replicates sunlight by emitting optical radiation in a pre-defined spectrum that includes UV and visible light spectrums, treats disorders that respond to phototherapy. Ex. 1004, 1:32–4:12, 5:19–16:10. The therapeutic effect of the lamp and its pre-defined spectral composition “can be obtained purely by way of the eyes” and “is substantially more pleasant to the eye than the spectrum of conventional illuminants.” *Id.* at 5:8–11, 7:35–36.

Weth’s treatment of myocardial infarctions, arteriosclerosis, strokes, embolisms, and thromboses with optical radiation from its sunlight lamp (Ex. 1004, 5:19–7:9, 10:1–12:28) treats cardiovascular disorders, which are light responsive disorders described in the ’140 patent (Ex. 1001, 8:44–50).

Similarly, reducing coagulation and fibrinogen diseases (Ex. 1004, 5:27–6:3, 10:11–26) treats seasonal affective and cardiovascular disorders. Improved sleep quality (*id.* at 12:34–35) treats sleep disorders and circadian disruption. Improved well-being, vigilance, daily life activities, fatigue reduction, and anti-depressive symptoms (*id.* at 12:32–34, 13:25–35, 14:1–17, 14:28–35) treat alertness and performance disorders. Hormone therapy to suppress appetite (*id.* at 15:12–17), promote vitamin D formation (*id.* at 13:1–12), and reduce fat levels (*id.* at 13:14–21) treats eating disorders and neuroendocrine systems. Improved photoreceptor sensitivity (*id.* at 12:30–37) treats photoneural systems as claimed.

Petitioner relies on Weth’s use of spectra in the UV range of 251 nm to 368 nm *and* the visible light range of 380 nm (± 15 nm) to 800 nm (± 15 nm) with a spectral line of 438 nm (± 15 nm) that falls within the claimed peak range of 435–488 nm to treat light responsive disorders as discussed above and as discussed below. *See* Pet. 5–10, 15–18, 20–27; Ex. 1003, 2.

Petitioner contends that Weth employs “a pre-established spectral composition that has been pre-identified as a maximally potent spectral composition” in element [1b] § 2. Pet. 25–26 (citing Ex. 1004, 1:19–21, 2:19–26, 2:34–36, 3:13–20, 3:22–4:13, 4:9–16, 5:27–30, 5:37–6:3, 12:30–37, 13:25–30, 18:14–19, 19:3–15 (claims 1 and 2); Ex. 1005 ¶¶ 66, 67).

Patent Owner argues that Weth’s light source “is specifically set to correspond to a subject’s ‘absorption lines of the following endogenous, essential substances’ but “Weth *never* identifies a single ‘endogenous, essential substance[]’ that would correspond to the spectral composition of the light source.” Prelim. Resp. 11. Patent Owner argues that Petitioner tries to equate the phrase “endogenous, essential substances” with the phrase “the subject’s light sensitive substances,” but Weth, at best, discloses that its invention requires a UV component, which is different from the 435–488 nm region in claim 1 or a maximally potent spectral composition in the blue light region to treat a light responsive disorder. *Id.*

Patent Owner’s arguments do not address Petitioner’s contentions that Weth provides a pre-defined spectral composition very close to sunlight in the ultraviolet *and* the visible light spectrums with a spectral line of 438 nm that falls within the claimed range of 435–488 nm. Pet. 25–27. Petitioner relies on Weth’s disclosure that these spectral lines correspond to a subject’s absorption lines of endogenous, essential substances, and tuning the spectral composition to a subject’s light response mechanism makes the composition “maximally potent” as claimed. *Id.* at 25–26 (citing Ex. 1004, 3:22–4:13). Petitioner cites the ’140 patent’s description of studies that wavelengths of 446–477 nm are most potent for regulating melatonin, and the photoreceptor system responds to the wavelengths to regulate circadian rhythms. *Id.* at 26.

Dr. Heller testifies that selecting spectral compositions to correspond to a subject's light response mechanism via absorption lines of endogenous, essential substances means the spectral composition is "a maximally potent spectral composition," as claimed, because the spectral lines correspond to the absorption lines of the endogenous, essential substances. Ex. 1005 ¶ 67. Dr. Heller bases his opinion on Weth's description of spectral compositions being effective to improve the quality of sleep, avoid myocardial infarctions and strokes, reduce embolisms and thromboses, prevent diseases caused by coagulation disorders, and improve depression. *Id.* (citing Ex. 1004, 3:22–4:13, 5:19–25, 5:27–30, 5:37–6:3, 12:30–37, 13:25–30).

Petitioner's contentions are supported by Dr. Heller's opinions and are consistent with other record evidence. Weth's sunlight spectra gives "a full spectrum effect" that is important to the eyes and clinical effect. Ex. 1004, 18:16–32; *id.* at 7:31–38 (significantly improved clinical findings via eyes). The lamp's carrier gases emit a broad light spectrum for clinical effect. *Id.* at 18:14–19. Each spectral line in Weth's pre-defined UV and visible light sunlight spectrum corresponds to an absorption line of endogenous, essential substances of a patient. Ex. 1004, 1:32–2:17, 3:13–4:12. Improved *receptor sensitivity* results from this pre-defined spectrum leading to improved sleep quality and increased vigilance. *Id.* at 12:30–37; Pet. 15–16, 26.

Because the sunlight spectrum includes a spectral line of 438 nm that falls in the claimed peak range of 435–488 nm, it is maximally potent. Pet. 9–10, 27; *In re Best*, 562 F.2d 1252 (CCPA 1977) ("[I]t is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art, does not cause a claim drawn to those things to distinguish over the prior art."); Ex. 1023, 668–669.

Petitioner's and Dr. Heller's contentions are supported by scholarly articles that reflect the knowledge in the art that light, particularly light in the blue and green light spectrums, regulates the human circadian rhythm through melatonin, which is a hormone whose secretion is suppressed by light, and inhibits nocturnal melatonin secretion. Pet. 10 (citing Ex. 1010, 1267; Ex. 1023, 669; Ex. 1005 ¶ 34). Increased physiological response can be triggered by specific wavelengths, and middle wavelengths of green and blue light (as opposed to longer, red wavelengths) can suppress nocturnal melatonin secretion more than other wavelengths. *Id.* (citing Ex. 1016, 564; Ex. 1023, 669; Ex. 1015, 117; Ex. 1005 ¶ 35).

Regarding element [1b] § 3, Petitioner asserts that Weth regulates “at least one of the human circadian, photoneural, or neuroendocrine systems” by using the lamp to increase the dopamine level and increase vigilance as well as improve the quality of sleep. Pet. 26–27 (citing Ex. 1004, 12:32–35; Ex. 1005 ¶ 68). Petitioner asserts that the wake-sleep cycle is part of the circadian rhythm, and dopamine is a neurotransmitter known to influence sleep so that “Weth teaches a spectral composition “*in the regulation of . . . the human circadian . . . or neuroendocrine system*[/]” as claimed. *Id.*

Patent Owner argues that Weth's disclosure that using the lamp leads to an increase in the dopamine level, and vigilance increases, and improves the quality of sleep “does *not* disclose that dopamine is part of the human circadian system.” Prelim. Resp. 12. Patent Owner asserts that Petitioner asserts the sleep-wake cycle is controlled by the circadian system by the release of melatonin, and the circadian system controls the sleep-wake cycle including dopamine, a neurotransmitter, to affect sleep-wake. *Id.* at 12–13.

Patent Owner argues further that

Bombardier's argument is premised on the circadian system regulating dopamine, rather than dopamine regulating the circadian system, and therefore cannot anticipate this feature. Moreover, Weth does not disclose a specific spectral composition of light that regulates dopamine, let alone any aspect of the human circadian or neuroendocrine system. Rather, Weth discloses that the UV component is a necessary wavelength region to obtain the desired effects. Weth at p. 2, lines 33-36 ("without" the UV component "it could not develop the desired effects.").

Id. at 12. Patent Owner argues that dopamine is known to absorb light in the UV region with wavelengths less than 300 nm rather than in the claimed range of 435–488 nm, and dopamine is not excited by light of wavelengths longer than 300 nm but instead has a peak absorption of 279 nm. *Id.* at 13–15 (citing Ex. 2002, 901–902).

Even accepting these arguments as true, Petitioner also asserts "a POSITA understood that the exposure of a subject's eyes to optical radiation was the primary stimulus for regulating circadian rhythms, seasonal cycles, and neuroendocrine systems responses in many mammals, including humans." Pet. 9 (citing Ex. 1010, 1267 ("Bright artificial light suppressed nocturnal secretion of melatonin in six normal human subjects."); Ex. 1005 ¶ 32). Dr. Heller testifies that a skilled artisan by 1990 understood that circadian rhythms, seasonal cycles, and neuroendocrine system responses were regulated primarily through the exposure of a subject's eyes to optical radiation. Ex. 1005 ¶ 32 (citing Ex. 1010, 1267; Ex. 1016, 556 ("The light-dark (LD) cycle is the most powerful synchronizing stimulus acting on the human circadian timing system.")).

Petitioner asserts that a skilled artisan would understand exposure of a subject's eyes to light emitted by Weth's lamp in pre-defined spectral lines described in Weth would regulate the human circadian, photoneural, and/or neuroendocrine systems as claimed. Pet. 26 (incorporating the discussion of Light Regulation to Prevent and/or Treat a Light Responsive Disorder at Pet. 9–10). Petitioner asserts that the improved wake-sleep cycle results from the improved photoreceptor sensitivity to Weth's UV and visible sunlight lamp (Ex. 1004, 12:30–37), and this disclosure indicates the spectral lines affect a subject's circadian system, which controls the sleep-wake cycle. Pet. 9, 26.

Petitioner's contentions, and Dr. Heller's testimony, are supported by evidence that (1) bright artificial light suppresses melatonin secretion in humans and does so immediately (Ex. 1010, 1267–68), (2) light may have significant endocrine effects on humans (*id.* at 1268), (3) neuroendocrine response to bright light makes it a possible synchronizer of the circadian pacemaker in humans (Ex. 1011, 667), (4) bright light exposure is a tool to regulate circadian rhythms as endogenously generated rhythms (Ex. 1027, 105), and (5) light received by the retinas affects the sleep-wake cycle and synchronizes/controls the circadian system (Ex. 1027, 105–106). Pet. 9, 26.

Patent Owner does not dispute Petitioner's contentions that Weth's visible light spectra, including a spectral line at 438 nm, regulate a subject's circadian system and sleep-wake cycle. Prelim. Resp. 12–15; *see* Pet. 6–10, 24–27. Thus, even accepting Patent Owner's arguments that dopamine is stimulated at a peak excitation wavelength of 279 nm (Prelim Resp. 13–15), Petitioner has made a sufficient showing that Weth's sunlight lamp emits visible light spectral lines that regulate at least one of the human circadian, photoneural, or neuroendocrine systems as recited in element [1b] § 3.

Regarding element [1b] § 4, Petitioner asserts that Weth discloses “said pre-established spectral composition comprising at least one enhanced spectral region comprising at least one peak of emitted light within the range of 435–488 nm” as claimed. Pet. 27 (citing Ex. 1004, 19:9–15 (claim 2); Ex. 1005 ¶ 69). Specifically, Petitioner contends that Weth’s spectral line at 438 nm (± 15 nm) is “at least one enhanced spectral region comprising at least one peak of emitted light” that falls within the 435–488 nm range. *Id.*

Patent Owner argues that “Weth does not disclose why such a region should be selected [and] Weth discloses no aspect of the human circadian system that would be regulated by a spectral region having a peak in the 435–488 nm region.” Prelim. Resp. 15. Patent Owner asserts that Petitioner has not shown “that Weth discloses the use of light in the 435–488 nm region having *any therapeutic effect*” and “relies on a UV component for its therapeutic effect.” *Id.* (citing Ex. 1004, 2:34–36) (“Dopamine is not excited by light having a wavelength in the range of 435–488 nm.”).

Yet, Weth’s lamp emits a pre-defined spectrum of UV and visible light spectral lines for “avoiding disease and increasing the well-being and performance.” Ex. 1004, 1:32–2:36, 19:3–7 (claim 1), 3:13–4:13, 19:9–15 (claim 2); Pet. 15–16. The spectral lines correspond to absorption lines of endogenous essential substances to provide a full spectrum effect for the eyes and a clinical effect. Ex. 1004, 2:1–5, 3:22–23, 18:16–19; *see* Pet. 16 (“Weth attributes the therapeutic and preventative effects of its light composition to one or more spectral peaks in both the UV and visible spectrum [that] ‘correspond to the absorption lines of the [] endogenous, essential substances.’”) (citing Ex. 1005 ¶ 49), 25–26. The lamp’s carrier gases emit a broad light spectrum for clinical effect. *Id.* at 18:14–19.

Because the 438 nm spectral line of Weth’s sunlight composition is “at least one peak of emitted light within the range of 435–488 nm,” as recited in claim 1, it anticipates that claimed range. *See In re Wertheim*, 541 F.2d 257, 267 (CCPA 1976) (“[T]he disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range.”); *see also Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985) (“It is also an elementary principle of patent law that when, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is ‘anticipated’ if *one* of them is in the prior art.”).

4. Limitation [1c]

Petitioner asserts that Weth discloses “exposing at least a portion of the retina of at least one eye of at least one mammal” to a light source that is not mounted to a subject’s body in element [1c] because the lamp is a ceiling or a tabletop lamp. Pet. 27–29 (citing Ex. 1004, 1:3–6, 1:32–36, 7:34–38, 8:10–14, 8:31–9:2, 9:21–24, 11:12–16:7, 19:17–18; Ex. 1005 ¶¶ 70–72).

This contention, which Patent Owner does not contest at this stage, is supported sufficiently by evidence of record. In particular, Weth discloses using the sunlight lamp for therapeutic and illumination purposes, and it “can be used both as a tabletop lamp and as a ceiling lamp for the purposes of avoiding disease and increasing the well-being and performance.” Ex. 1004, 2:24–26; *id.* at 9:4–8, 9:24–32. Weth also emphasizes that the therapeutic effect and the improved clinical findings that result from using the energy-saving, sunlight lamp result from the radiation and spectral lines being absorbed through the eyes. *Id.* at 7:34–36 (“What is important here is that the effect can be obtained purely by way of the eyes.”).

5. *Limitations [1d] and [1e]*

Petitioner asserts that Weth “stimulat[es] the photoreceptor system for at least one of the circadian, photoneural or neuroendocrine systems of said at least one mammal” in element [1d] because the therapeutic effect of the lamp is obtained purely by way of the eyes, which includes the retina and light-sensitive photoreceptor cells, and increases dopamine levels, vigilance, and quality of sleep where the wake-sleep cycle is part of the circadian rhythm, and dopamine is a neurotransmitter that influences sleep. Pet. 29 (citing Ex. 1004, 7:34–37, 12:32–35; Ex. 1017, 1; Ex. 1005 ¶¶ 73, 74).

Patent Owner argues that Weth does not disclose that increases in the dopamine level resulted from stimulating the circadian system and does not disclose dopamine is part of the wake-sleep cycle. Prelim. Resp. 16. Patent Owner asserts that Petitioner relies on external references as evidence of this limitation, which is an admission that Weth does not disclose this feature and therefore cannot anticipate the claim. *Id.* Patent Owner also argues that Weth does not disclose that dopamine is stimulated by a light source having a peak in the 435–488 nm range as claimed. *Id.*

As discussed, Weth discloses a pre-defined spectral composition that is maximally potent in regulating human circadian, photoneural, and/or neuroendocrine systems and includes a peak of emitted light in the range of 435–488 nm. Ex. 1004, 1:32–4:12, 5:8–16:15, 19:3–15. The lamp’s carrier gases emit a broad light spectrum for clinical effect. *Id.* at 18:14–19.

Petitioner asserts that skilled artisans understand that the exposure of a subject’s eyes to visible light, including blue or green light spectra at 430 nm and 540 nm, regulates melatonin, circadian rhythms, seasonal cycles, and neuroendocrine systems. Pet. 5–10, 15–18, 22–29; Ex. 1005 ¶¶ 30–35.

Patent Owner does not dispute that skilled artisans as of the filing date of the '140 patent would understand Weth's sunlight spectrum of UV and visible light, including a 438 nm spectral line in the range of 435–488 nm, would treat light responsive disorders and circadian systems effectively as Petitioner contends. *See* Prelim. Resp. 16–17; Pet. 7–10, 22–28; Ex. 1005 ¶ 32; *Arbutus Biopharma Corp. v. ModernaTX, Inc.*, 65 F.4th 656, 662 (Fed. Cir. 2023) (“A limitation is inherent if it is the ‘natural result flowing from the prior art’s express disclosure. . . . A patent ‘can be invalid based on inherency when the patent itself makes clear that a limitation is “not an additional requirement imposed by the claims . . . but rather a property necessarily present”.’”) (citation omitted); *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1345 (Fed. Cir. 2018) (“Monsanto confuses prior art with extrinsic evidence used to support what is ‘necessarily present’ in a prior art’s teaching. Extrinsic evidence ‘may be used to interpret the allegedly anticipating reference and [to] shed light on what it would have meant to [a skilled artisan].’”) (citation omitted); *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (“To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.”); *see also In re Kubin*, 561 F.3d 1351, 1357–58 (Fed. Cir. 2009) (“[T]he Kubin–Goodwin application itself instructs that CD48 binding is not an additional requirement imposed by the claims on the NAIL protein, but rather a property necessarily present in NAIL.”).

Regarding element [1e], Petitioner asserts that Weth's lamp enables the treatment or prevention of a light disorder in at least one mammal. Pet. 30 (citing Ex 1004, 5:19–30, 5:37–6:3, 12:34–35, 13:24–33, 16:1–7; Ex. 1005 ¶ 75).

Patent Owner argues that Petitioner relies on Weth's treatment of disorders but does not link the treatment of these disorders to any circadian, photoneural, or neuroendocrine systems. Prelim. Resp. 16. Patent Owner also asserts that Weth does not disclose treating any of the disorders with light having a wavelength in the claimed 435–488 nm range, and Weth's lamp requires a UV spectrum to develop the desired effects. *Id.* at 17.

As asserted by Petitioner and discussed above, Weth's pre-defined spectral composition comprises spectral lines in the UV and visible light spectrums to include individual spectral lines in the blue and green spectra and within the claimed 435–488 nm range (i.e., a spectral line of 438 nm). Pet. 5–10, 22–29 (and reference teachings cited therein). Weth discloses the spectral lines correspond to the absorption lines of endogenous, essential substances (Ex. 1004, 2:13–4:12) and improved photoreceptor sensitivity that improves the quality of sleep (*id.* at 12:30–37), which skilled artisans would understand as resulting from regulation of the circadian system and melatonin production and the photoneural system. *See* Pet. 7–10, 22–29.

Production of vitamin D and fat metabolism regulation in Weth also appear to control the neuroendocrine system as claimed. *See* Pet. 9 (citing Ex. 1010, 1267; Ex. 1005 ¶ 32), 24 (citing Ex. 1004, 13:1–21), 28 (same).

On this record, we find that Petitioner has established a reasonable likelihood that claim 1 is unpatentable as anticipated by Weth.

6. *Claim 6*

Petitioner contends that Weth enables the prevention of at least one light responsive disorder in said at least one mammal in claim 6. Pet. 30–31 (citing contentions for claim 1; Ex. 1004, 5:19–25, 5:37–6:3, 9:5–8, 10:18–26; Ex. 1005 ¶¶ 76, 77). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record. As discussed, Weth’s lamp prevents cardiovascular disorders of embolisms, thromboses, myocardial infarctions, strokes, and light responsive disorders of the immune system, tumors, sleep disorders, inactivity, and it suppresses appetite. Ex. 1004, 5:19–6:31, 8:23–9:2, 10:1–15:17. Light therapy may be used as a prophylaxis to prevent protein formation leading to Alzheimer’s, skin diseases, and many other diseases. *Id.* at 7:20–9:8.

On this record, we find that Petitioner has established a reasonable likelihood that claim 6 is unpatentable as anticipated by Weth.

F. Ground 2: Alleged Obviousness over Weth and Weber

Petitioner asserts the unpatentability of claims 2–5 and 7–9 under 35 U.S.C. § 103 over Weth and Weber, which are prior art under 35 U.S.C. § 102. Pet. 4, 31–39.

1. *Weber (Ex. 1022)*

Weber discloses color filters that transmit wavelengths of desired colors such as blue or cyan. Ex. 1022, 6:31–33 (blue pass filter), 19:21–31 (same). The filters can concentrate light of desired wavelengths and control the wavelength of light emitted from an artificial broadband light source. *Id.* at 86:21–52, 91:41–45. Ultraviolet protective filter films and coatings may be applied. *Id.* at 79:35–49.

2. *Motivation to combine*

Petitioner asserts that a skilled artisan would have been motivated to use Weber's filtering on Weth's lamp to remove light at certain wavelengths (e.g., yellow light at 580 nm to 600 nm) that may cause headaches or nausea so Weth's lamp may be used at higher intensities for improved effectiveness of certain therapies while avoiding side effects of "headaches and nausea" thereby increasing a subject's ocular exposure to the light during a therapy session. Petitioner asserts that a skilled artisan would have had a reasonable expectation of success in combining Weth's lamp with Weber's filter "to produce a therapeutically effective light composition that could be operated at a higher luminosity without introducing undesirable side effects." Pet. 31–35 (citing Ex. 1004, 1:8–14, 1:23–25, 2:21–22, 3:13–20, 5:10–11, 9:29–32; Ex. 1005 ¶¶ 78–83; Ex. 1010, 1267; Ex. 1013, 200; Ex. 1022, 1:10–14, 86:35–49, Fig. 19; Pet. § V.E.). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record. In particular, Weth's "sunlight" lamp emits optical radiation across a broad spectrum that replicates sunlight and comprises ultraviolet and visible light spectral lines, as discussed above for Ground 1, claim 1, and this novel light spectrum is "substantially more pleasant to the eye than the spectrum of conventional illuminants." Ex. 1004, 1:32–4:13, 5:8–17, 19:3–15. Yet, yellow spectrum light may cause headaches and nausea. Ex. 1013, 200.

Weber's color bypass filters would remove harmful or undesirable light spectra while allowing spectral lines of maximum therapeutic effect to pass through where Weth configures the lamp to emit specific spectral lines at reduced intensity to avoid unpleasant side effects and to yield a maximum therapeutic effect. Ex. 1004, 1:8–14, 5:8–17, 8:1–14, 10:1–16:15.

Weber describes filters that function as simple color filters and can filter substantially all yellow spectrum light while transmitting a substantial portion of the spectrum below 500 nm. Ex. 1022, 19:21–31, 79:35–49, 94:41–45, Fig. 19 (cited in Pet. 18–19, 33–34). Use of this known technique in Weber would have improved Weth’s lamp similarly for predictable results of reducing a subject’s exposure to yellow light spectrum with a resulting reduction in the subject’s headaches and nausea. *KSR*, 550 U.S. at 417; *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006) (an implicit motivation to combine exists when an “improvement” makes a product stronger, cheaper, faster, lighter, smaller, more durable, or more efficient). Weber also teaches to use its films and optical bodies with normal, unfiltered solar light or combined with artificial broadband light sources to control the wavelength of light emitted from the source. Ex. 1022, 94:42–45 (cited in Pet. 18, 33).

3. Claim 2

Petitioner asserts that Weth discloses the method of claim 1 from which claim 2 depends by providing “therapeutically effective optical radiation” from a light source that emits optical radiation with UV and visible light spectral components ranging from 251 nm (± 5 nm) to 800 nm (± 15 nm) with a spectral peak at 438 nm, and Weber uses a light filtering component with such a light source to transmit UV and visible light components with wavelengths below 500 nm to transmit Weth’s spectral peak at 438 nm as therapeutically effective optical radiation in claim 2. Pet. 35–36 (citing Ex. 1004, 1:34–36, 3:16–20, 19:3–15; Ex. 1005 ¶¶ 84, 85; Ex. 1022, 6:31–33). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record.

4. *Claim 3*

Petitioner contends that Weth-Weber discloses the method of claim 2 from which claim 3 depends, and Weber discloses a method that provides at least one transparent composition in conjunction with said at least one light filtering component, as claim 3 requires, by disclosing an embodiment that places a color filter on a substrate that is transparent to certain colors but colored to transmit optical radiation in a range of at least 425 nm to 500 nm that encompasses Weth's spectral peak of 438 nm. Pet. 36 (citing Ex. 1005 ¶¶ 86, 87; Ex. 1022, 19:21–31, 73:31–32, Figs. 19, 32; Pet. 35–36 (claim 2 contentions for Weth)). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record. In particular, Weber uses color shifting films and filters with colored substrates that can be opaque, translucent, or transparent to certain colors, i.e., clear without diffusers but colored. Ex. 1022, 19:21–31, 73:25–33.

5. *Claim 4*

Petitioner contends that Weth-Weber discloses the method of claim 2 from which claim 4 depends, and Weber provides a translucent composition with the at least one light filtering component in claim 4 by placing a color filter film on a translucent substrate that diffusely transmits with various amounts of haze and also transmits optical radiation in a range of 425 nm to 500 nm range, which encompasses Weth's spectral peak of 438 nm. Pet. 36–37 (citing Ex. 1022, 19:21–31, 73:30–31, Figs. 19, 32; Ex. 1005 ¶ 88). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record. In particular, Weber places a color filter film on substrates that can be translucent to transmit light diffusely with various amounts of haze. Ex. 1022, 19:21–31, 73:30–31.

6. *Claim 5*

Petitioner contends that Weth-Weber discloses the method of claim 2 from which claim 5 depends, and Weber provides a translucent composition for the light filtering in claim 5 for the same reasons as claim 4. *See* Pet. 37 (citing contentions for claims 2 and 4; Ex. 1005 ¶ 90). These contentions, which Patent Owner does not contest at this stage, are supported sufficiently by evidence of record for claim 5 for the same reasons as discussed above for claim 4.

7. *Claim 7*

Petitioner contends that Weth discloses the method of claim 6 from which claim 7 depends, and Weth-Weber renders obvious providing the light filtering component with the at least one light source and causing the light filtering component to transmit therapeutically effective optical radiation as in claim 7. Pet. 38 (citing contentions for claims 6 and 2; Ex. 1005 ¶ 91). These contentions, which Patent Owner does not oppose at this stage, are supported sufficiently by evidence of record for claim 7 for the reasons discussed above for claims 2 and 6.

8. *Claim 8*

Petitioner contends that Weth-Weber discloses the method of claim 7 from which claim 8 depends and renders obvious providing at least one transparent composition with the light filtering component in claim 8 for the same reasons as claim 3. Pet. 38 (citing contentions for claims 3 and 7; Ex. 1005 ¶ 92). These contentions, which Patent Owner does not oppose at this stage, are supported sufficiently by evidence of record for claim 8 for the reasons discussed above for claims 3 and 7.

9. *Claim 9*

Petitioner contends that Weth-Weber discloses the method of claim 7 from which claim 9 depends and renders obvious providing at least one translucent composition with the light filtering component in claim 9 for the same reasons as claim 4. Pet. 39 (citing contentions for claims 4 and 7; Ex. 1005 ¶ 93). These contentions, which Patent Owner does not oppose at this stage, are supported sufficiently by evidence of record for claim 9 for the reasons discussed above for claims 4 and 7.

On this record, we find that Petitioner has established a reasonable likelihood that claims 2–5 and 7–9 are unpatentable as obvious over Weth and Weber.

III. CONCLUSION

For the reasons discussed above, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing in establishing that at least one of claims 1–9 of the '140 patent is unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review of the '140 patent is hereby instituted as to claims 1–9 on all grounds set forth in the Petition; and

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

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