

**SUPPLEMENTAL EXPERT DECLARATION OF ROBERT E. GROVE, PH.D., FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 11,697,028**

I. INTRODUCTION

1. I, Robert E. Grove, submit this supplemental declaration in support of Petitioner's Reply to Patent Owner's Response in *Inter Partes* Review Proceeding No. IPR2024-01312 of United States Patent No. 11,697,028 ("the '028 Patent"), owned by Sun Pharmaceuticals, Inc., ("Patent Owner" or "Sun").

2. I have been retained in this matter by Polsinelli ("Counsel") on behalf of Biofrontera Inc., Biofrontera BioScience GmbH, Biofrontera Pharma GmbH, and Biofrontera AG (collectively, "Petitioner" or "Biofrontera").

3. I make this declaration based upon my personal knowledge. I am over the age of 21 and am competent to make this declaration.

4. I incorporate by reference my opinions set forth in my declaration signed on August 21, 2024, submitted in this proceeding as Ex. 1015.

5. My materials considered for forming my opinions herein are listed in Ex. 1015 and below in Appendix A in view of my specialized knowledge provided by my education, training, research, and experience, as summarized in Ex. 1015 and described in detail in my CV, which was provided as Appendix B to Ex. 1015.

6. I understand that Petitioner retained me using Rubin Anders Scientific, Inc. ("RAS"), and that RAS is being compensated at a rate of \$1,000 per hour for my time spent in preparing this declaration. Regardless of my compensation in this matter, the opinions herein are my own, and I have no stake in the outcome of the review proceeding. My compensation does not depend in any way on the outcome of Petitioner's petition.

II. RELATED PROCEEDINGS

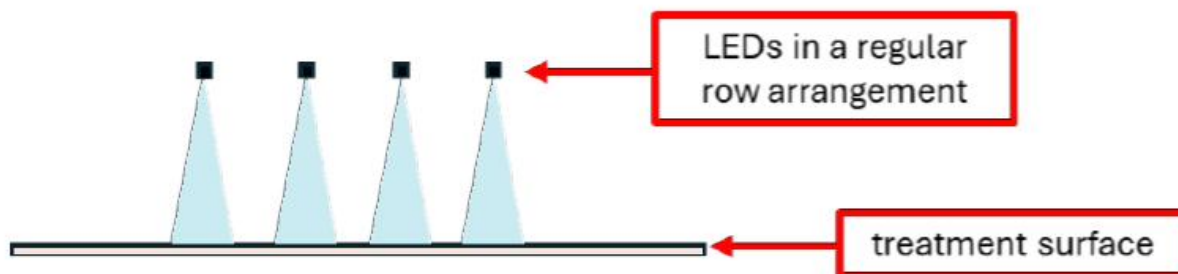
7. The '028 Patent is involved in a related ITC matter, *In Re Certain Photodynamic Therapy Systems, Components Thereof, And Pharmaceutical Products Used In Combination With The Same*, Investigation No. 337-TA-1411, that may affect or be affected by this proceeding. See EX1020 (ITC Complaint).

8. I have applied the construction of the claims as ordered in the related ITC matter. See EX2033 (ITC Order No. 18).

III. REPLY TO DR. JOKERST'S TESTIMONY

A. LED Light Emission

9. In her declaration in support of the Patent Owner Response, Dr. Jokerst includes a discussion of the "Technology Background," in which she discusses the technology underlying fluorescent tubes, as well as LEDs. See EX2050, ¶¶37-48. In particular, Dr. Jokerst states that LEDs "are discrete, point source, directional illuminators *with a Lambertian output characteristic*" (emphasis added). EX2050, ¶46. While I agree with this statement, I disagree with how Dr. Jokerst has illustrated and characterized the light distribution pattern from LEDs. Dr. Jokerst states that "LEDs emit light in a specific direction in a 'noncoherent, narrow band.'" *Id.* Additionally, Dr. Jokerst states that "LEDs placed in a regular row arrangement are not a continuous light source," and provides the following illustration:



EX2050, ¶46.

10. Again, while I agree that LEDs are discrete, point source, directional illuminators, Dr. Jokerst's discussion and illustration of the illumination profile for LEDs mischaracterizes what is known in the art. As an initial matter, Dr. Jokerst relies on EX2011, a 2008 article entitled "An Introduction to Light-emitting Diodes" by Bourget. EX2050, ¶44, 46-47. The only support for Dr. Jokerst's discussion and illustration of the LEDs having a "noncoherent, narrow band" is provided in the Bourget article (EX2011), and the discussion in the Bourget article is in reference to the wavelength of the emission from an LED light, *not* the light distribution. *See* EX2011, 1 ("Light-emitting diodes (LEDs) are semiconductor devices that produce noncoherent, narrow-spectrum light when forward voltage is applied. LEDs range in wavelength from the UVC band to infrared (IR) and are available in packages ranging from milliwatts to more than 10 W;" "LED light is of a noncoherent, narrow band (Wikipedia LED, 2008). In general, LEDs are not dangerous. However, care should be taken if LEDs in the UVB and UVC range are used, because those wavelengths can be dangerous to the eyes and skin in sufficient power levels"). Consequently, a POSA reading Bourget would conclude that the discussion of a "noncoherent, narrow band" refers to the wavelength of emission from the LED, and has nothing to do with the divergence (*i.e.*, spread) of light from the LED.

11. Further, Dr. Jokerst correctly notes that LEDs have a "Lambertian output characteristic." EX2050, ¶46. Exhibit 2013 cited in Dr. Jokerst's declaration, a 2015 article entitled "Visible Light Communications (VLC) Technology" by Ndjiongue, describes Lambertian LED light emission profiles. EX2013, 8. Specifically, Figure 6 of EX2013 illustrates a Lambertian distribution of light from LEDs.

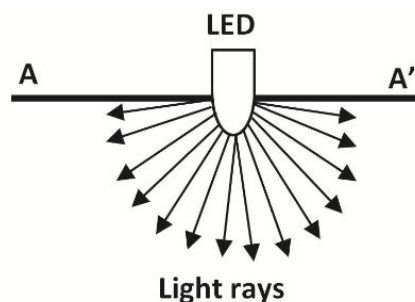
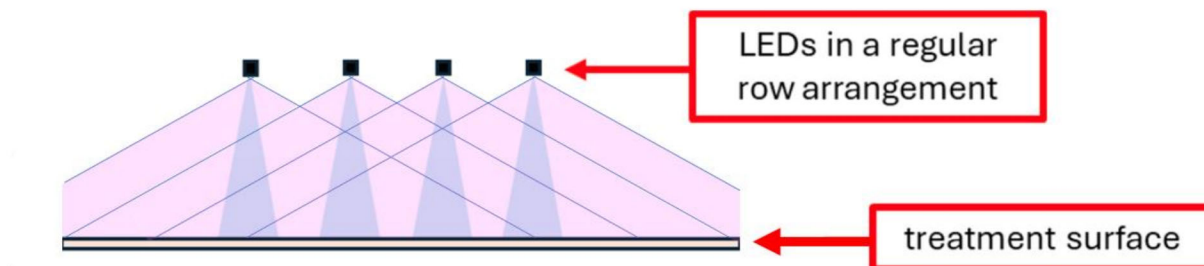


Figure 6: Scattering of the light from LEDs (Lambertian distribution); ($A - A'$) represents the Lambertian surface in the profile view

EX2013, 8.

12. The description of Lambertian light output provided in Ndjiongue is consistent with a POSA's understanding of LED light divergence (*i.e.*, spread). Consequently, the illustration of light output provided by Dr. Jokerst is inconsistent and contradictory to this well-known principle. Furthermore, Dr. Jokerst does not define the distance from the LEDs to the treatment surface, but it is my interpretation that this treatment surface is consistent with what is provided in the '028 Patent and Lundahl, meaning that the treatment surface is at a distance of approximately 2-4" from the light-emitting surface. Additionally, Dr. Jokerst fails to identify the lateral spacing between the LEDs provided in her illustration. However, because the lights are illustrated above a "treatment surface," it is my assumption that the lights are intended to reflect the general spacing of lights that would be expected on an LED panel (e.g., the LED panels described in Larsen), whereby the LEDs have a likely lateral spacing of several centimeters or less. Applying the Lambertian light output profile described in Ndjiongue to the illustration provided by Dr. Jokerst, and assuming a treatment surface distance of 2-4", with lateral spacing of LEDs of several centimeters or less, a POSA would expect the revised illustration below, which shows a more accurate and realistic emission angle for each LED, where the rays shown represent $I = I_0/2$, at an emission angle from each LED that is associated with a *Lambertian distribution*.

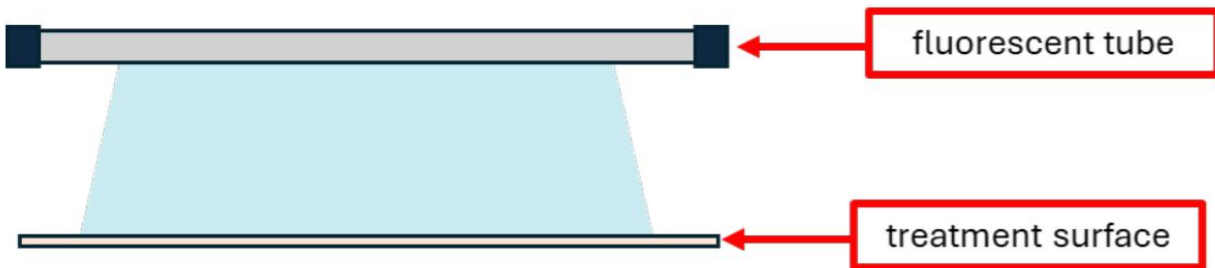


13. As can be seen from the modified illustration above, a POSA would understand that, while LEDs placed in a regular row arrangement are discrete light sources, unlike a fluorescent tube, a row of individual LEDs would not be expected to have the gaps in illumination that are illustrated by Dr. Jokerst.

14. Achieving a desired uniformity with LEDs is based on (a) the lateral spacing between individual LEDs in a given row, (b) the spacing between rows of individual LEDs, and (c) the spacing between the panels with the LED light emitting surface and the treatment surface. In the case of the teachings of Lundahl and Larsen and the combined device developed in view of their respective teachings, Lundahl provides guidance on (b) the spacings between rows of individual LEDs (as evidenced by the more dense grouping of rows at the top and bottom of the device, corresponding with the general location of the patient's forehead and chin), as well as (c) the spacing between the panels with the LED light emitting surface and the treatment surface (Lundahl expressly teaches that the treatment surface is 2-4" from the light emitting surface). EX1014, 6:43-57, 15:22-28. Consequently, the only factor that needs to be addressed is the spacing between LEDs within each row, but this is a very straightforward process, and is easily within the skill of a POSA.

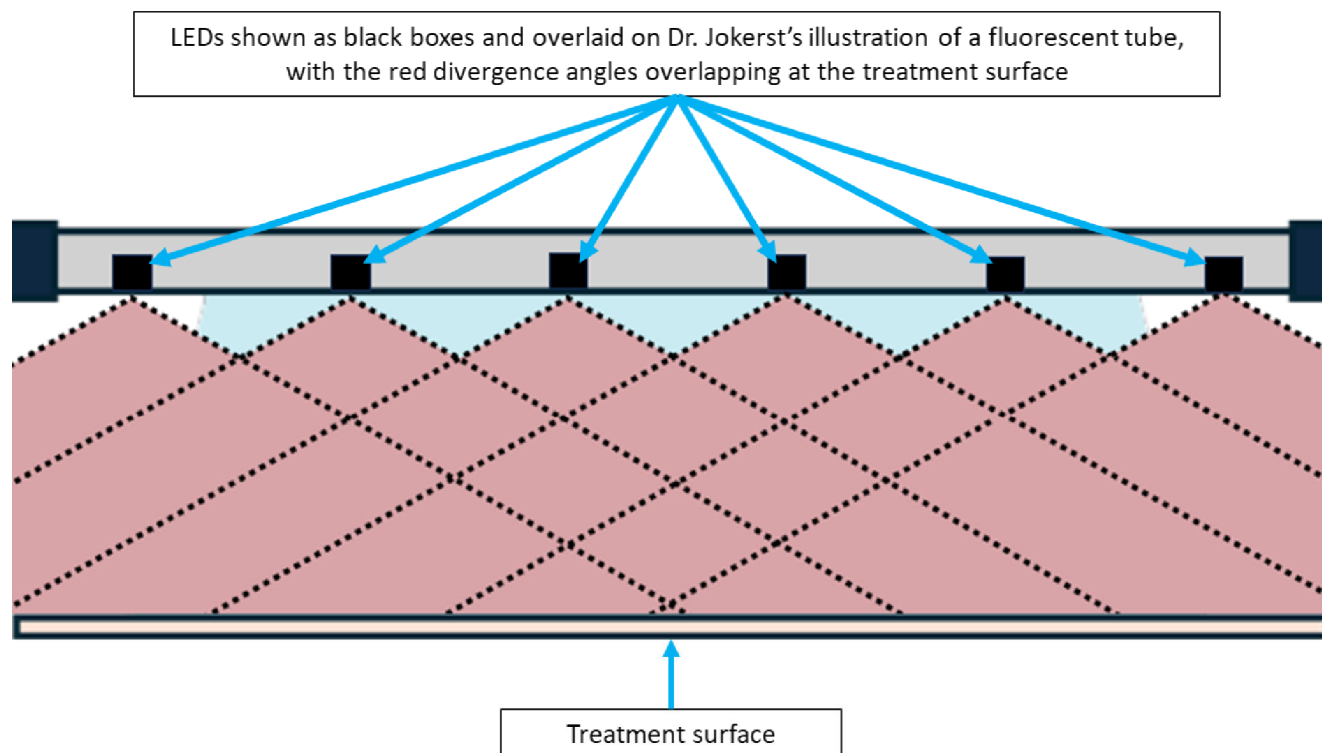
15. In particular, as I discussed in my original declaration (EX1015), based on the teachings of Lundahl and Larsen, a POSA would be motivated to replace the fluorescent tubes of

Lundahl with the LEDs taught by Larsen for a number of reasons. EX1015, ¶129-131. As described by Dr. Jokerst, fluorescent tubes are a continuous light source, as illustrated below:



EX2050, ¶45. Thus, knowing that this continuous light source was being replaced by discrete LEDs, a POSA would simply ensure that the divergence angles of the adjacent LEDs overlap at the desired treatment distance to ensure no “gaps” between the light emission of the individual LEDs. As I have illustrated below, it is a simple process of replacing the fluorescent tube with discrete LEDs, ensuring overlap of adjacent divergence angles at a distance from the treatment surface of a minimum of two inches¹:

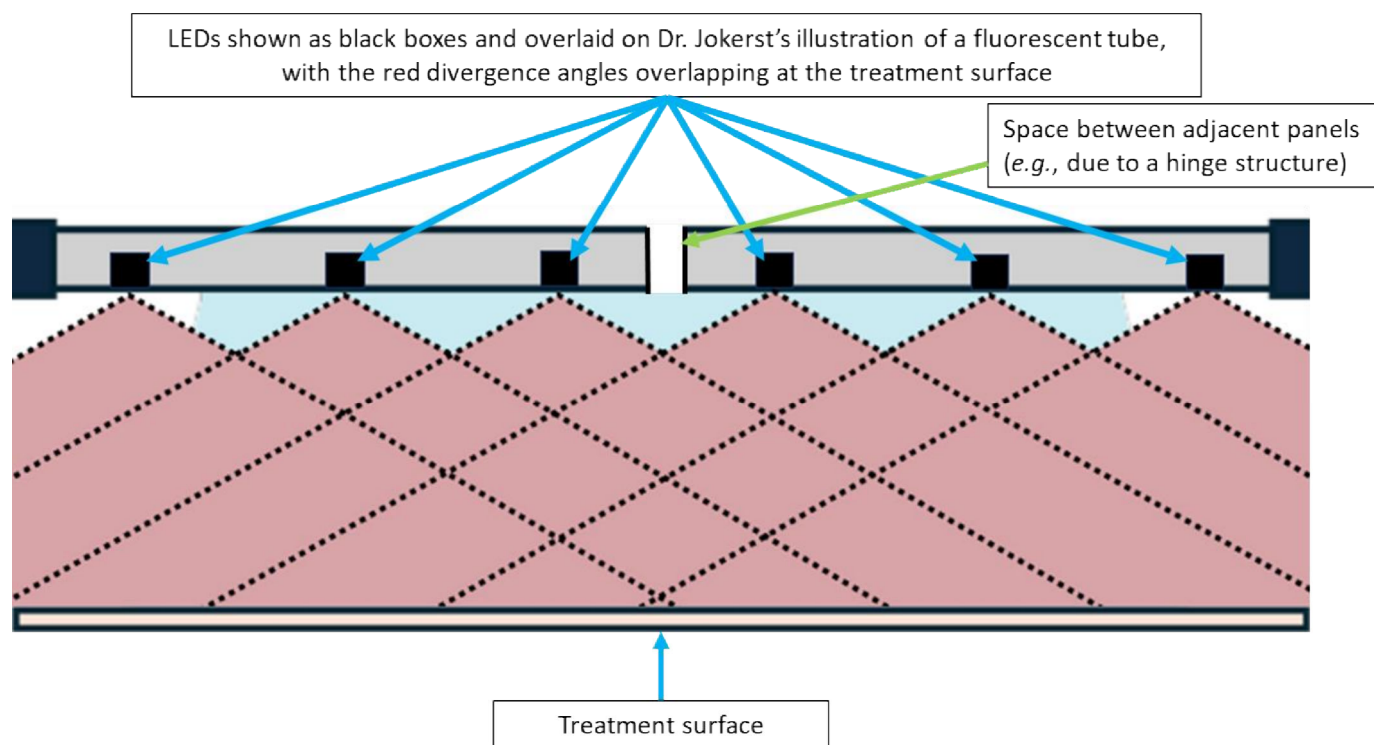
¹ The overlap of adjacent divergence angles would increase at distances from the treatment surface greater than the minimum of two inches, including at four inches.



16. It is a very straightforward process for a POSA to space adjacent LEDs in a manner that allows the divergence angles of these LEDs to overlap and prevent any gaps in illumination between adjacent LEDs. Indeed, the '028 patent seems to recognize this fact, as the first paragraph of the detailed description describes embodiments of a “configurable illuminator according to the present invention,” and states that, in addition to LEDs, “other types of light sources may be used, such as fluorescent or halogen lamps.” EX1001, 3:52-62. The '028 patent does not provide any discussion or disclosure suggesting that the transition from fluorescents to LEDs, or vice versa, would be challenging or require any specific design considerations or strategies, underscoring the understanding of a POSA that exchanging fluorescents for LEDs is a straightforward process for a POSA, contrary to Dr. Jokerst's assertions.

17. Additionally, even the physical space between adjacent panels resulting from the attachment of adjacent panels via hinges (or other means) is easily addressed by accounting for the

overlap of divergence angles at a distance from the treatment surface of a minimum of two inches², as I have illustrated below:



18. In fact, this common understanding is also reflected in the disclosure of the '028 Patent. The '028 Patent reports that “Fig. 8, on the other hand, illustrates the light uniformity produced by an embodiment of the present invention.” EX1001, 8:43-44.

² The overlap of adjacent divergence angles would increase at distances from the treatment surface greater than the minimum of two inches, including at four inches.

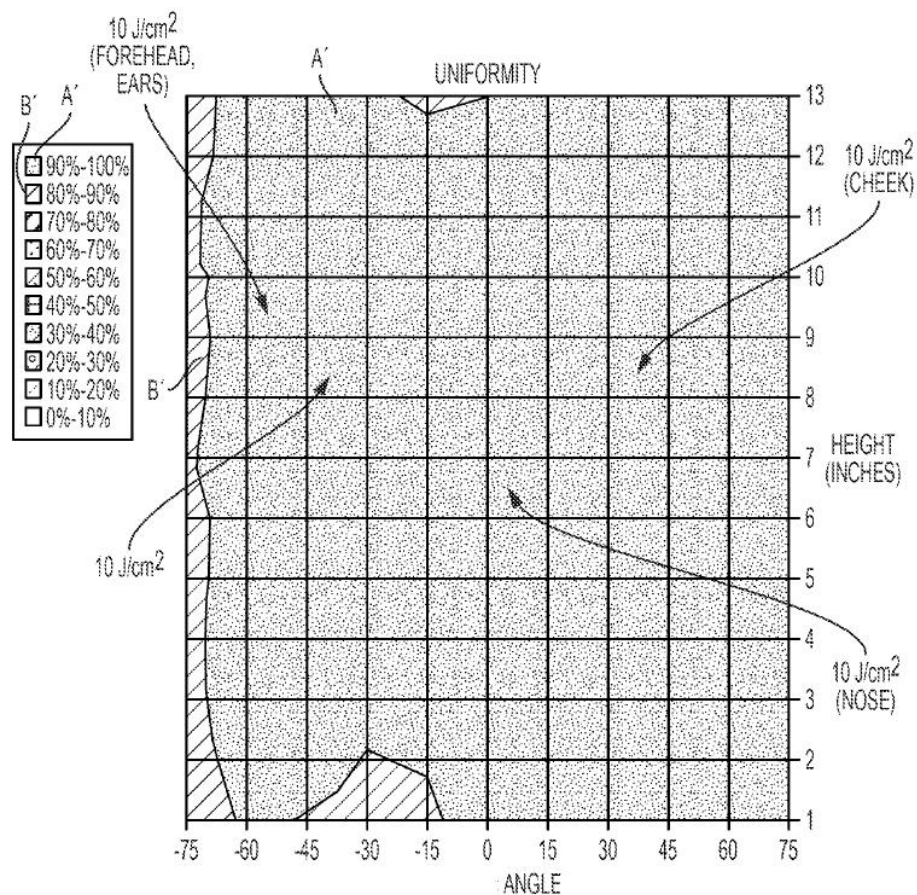


FIG. 8

EX1001, FIG. 8.

19. The uniformity of 90-100% provided in the '028 Patent is significantly higher than the 60% standard required by the claims. EX2033, 15. Notably, these uniformity values of 90-100% were achieved, yet the '028 Patent does not once describe the specific spacing of LEDs on the illuminator tested in Fig. 8. EX1001, 3:59-60. While the '028 Patent references “addressable strings” included in areas 1, 3, and 5, and 2, 4, and 6 (as illustrated in Fig. 5), the '028 Patent includes no disclosure as to the specific spacing of LEDs within each of these strings. *See* EX1001, 6:24-37. Additionally, the '028 Patent states that, “[e]ach panel contains an array of light emitting diodes (LED) 60, which may be configured in an evenly spaced pattern across the face of the panel[.] [t]he number of individual LEDs arranged in a given array is not particularly limited[.]”

EX1001, 3:56-60, but once again provides no discussion of the specific spacing of the LEDs on the panel. This is because a POSA would find the determination of the specific spacing between LEDs in a row to be a straightforward task given the understanding in the art, accounting for divergence angles and the Lambertian distribution.

20. Consequently, despite Dr. Jokerst's assertions that "[b]y replacing the continuous, diffuse light of the fluorescent tubes with discrete, directional point source LEDS with Lambertian outputs, Dr. Grove is creating gaps (between the LEDs) that were not in Lundahl's light distribution," (EX2050, ¶121), a POSA would understand that these alleged "gaps" would not be present in the combined device, because a POSA would know to account for the divergence angles of the LEDs, and space the lights accordingly.

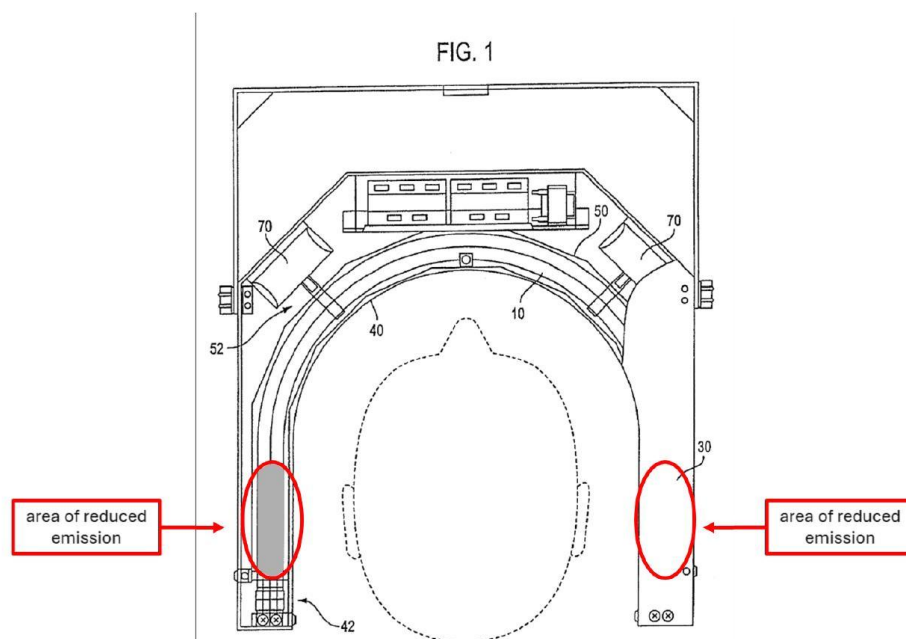
21. Dr. Jokerst's arguments mischaracterize the teachings in the art, and ignore the basic and standard knowledge of a POSA having a M.D. and/or a Ph.D. in an electrical engineering, physics, optical sciences, optical engineering, or a related scientific or engineering field, and at least one to two years of work or research experience in optical engineering, optics, optoelectronics, phototherapy ("PT"), PDT, or a related field.³ Thus, as outlined in my initial declaration, Lundahl in view of Larsen renders obvious the combined illuminator I described in my previous declaration, and a POSA would have at least a reasonable expectation that the combined illuminator would provide the claimed "uniform illumination," which the parties have agreed to be construed in the related ITC proceeding (and subsequently adopted by the Administrative Law Judge) as "irradiating light over the active emitting area such that the

³ This definition of a POSA is the definition provided in the Decision Granting Institution of *Inter Partes* Review dated February 24, 2025. While this definition differs from the definition I provided in my previous declaration, I nonetheless qualify as a POSA under this definition.

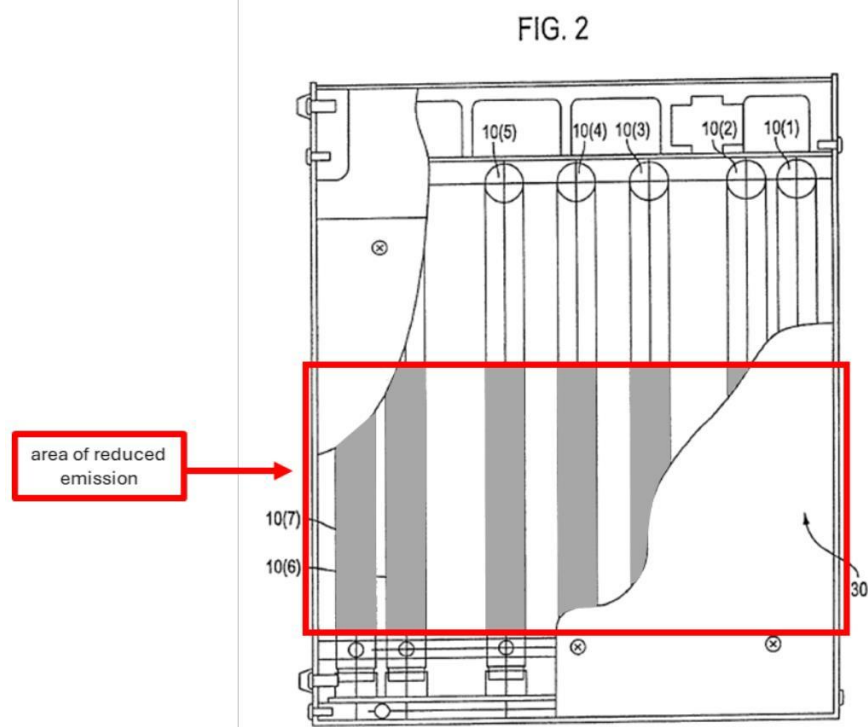
measured irradiance at a treatment surface of the patient is at least within 60% of the measured maximum.” See EX1015, ¶178-179; *see also* EX2033, 15.

B. LED Light Source Properties

22. As acknowledged by Dr. Jokerst, Lundahl teaches that a fluorescent tube has an area of reduced emission near the cathode known as the Faraday dark space. EX1014, 5:66-6:4; EX2050, ¶40. Dr. Jokerst explains that this “area of reduced emission” is reflected in multiple illustrations included in her declaration, including the following:

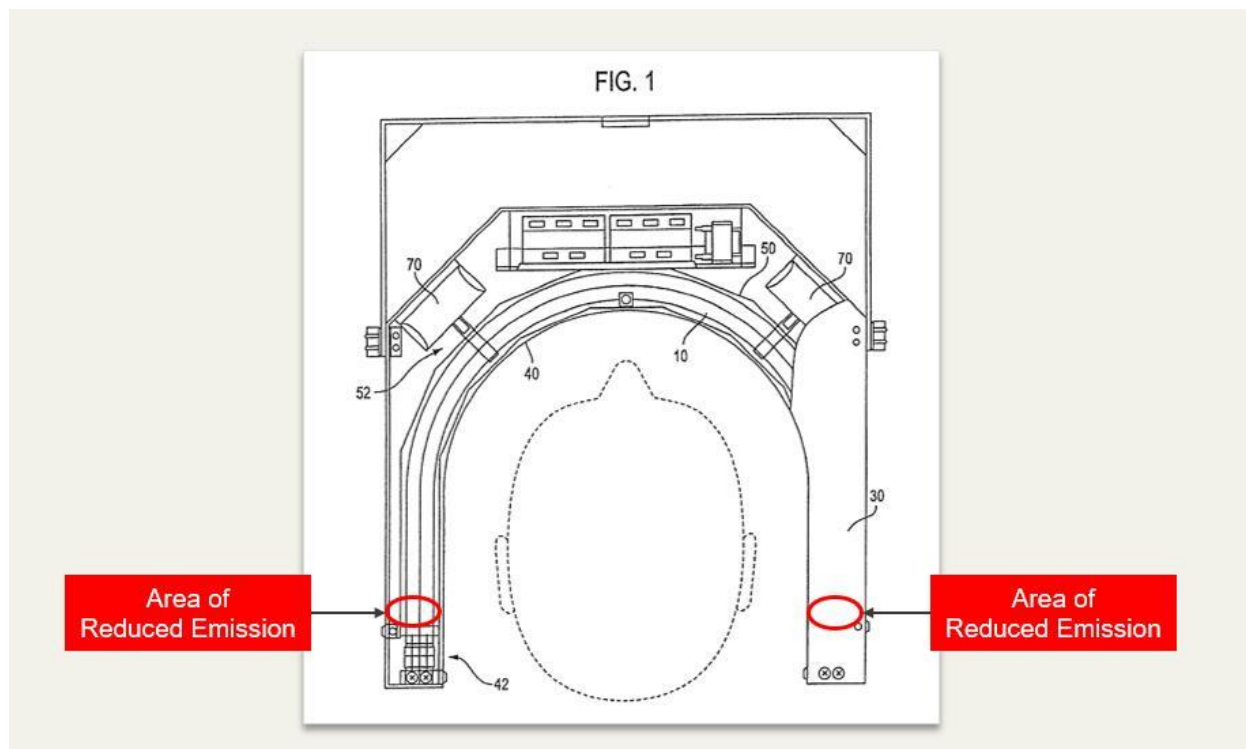


EX2050, ¶145.



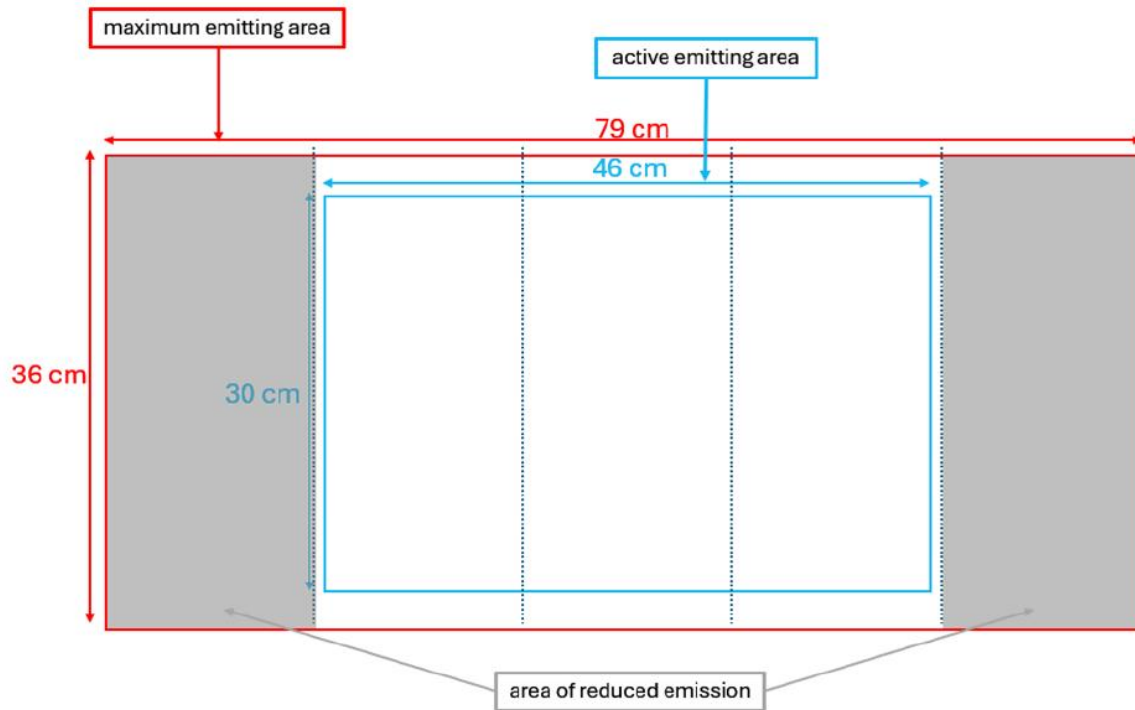
EX2050, ¶145.

23. However, these illustrations are inconsistent with Lundahl’s own description of the location of the Faraday dark space. Lundahl states that “the cathodes and their low output area [are] located outside the active emitting area (*effectively behind the patient’s ears*).” EX1014, 6:10-20 (emphasis added). The portion of the fluorescent tubes shown in Fig. 1 of Lundahl behind the ears is a very small portion of the tube immediately adjacent the metal couplings, as I have illustrated below.



24. Conversely, the illustration provided by Dr. Jokerst shows an area of reduced emission that is *next to* and even *in front of* the ears. This is not what Lundahl discloses. Lundahl states that the reduced emission is *behind* the ears. Consequently, it is my opinion that Dr. Jokerst's positions on the areas of reduced emission mischaracterize the teachings of Lundahl, and I disagree with these positions.

25. Moreover, when describing the "maximum emitting area" and the "active emitting area," Dr. Jokerst provides the following illustration:



EX2050, 98.

26. However, Dr. Jokerst conveniently omits that Lundahl describes the “active emitting area” that is denoted by the 30 cm x 46 cm portion of her illustration above, as the “*minimum* therapeutically active area.” EX1014, 5:38-46 (emphasis added). Consequently, a POSA would recognize that this “therapeutically active area” (i.e., “active emitting area”) could be larger than the region Dr. Jokerst has noted in her illustration.

IV. CONCLUSION

27. In my opinion, claims 1, 2, 4-6, 16, 17, 19, 20, and 21 of the '028 Patent are invalid for at least the reasons stated above, in addition to the reasons I have stated in my previous declaration, as well as the reasons I have provided in my expert reports, witness statements and demonstratives, and hearing testimony provided in ITC Investigation No. 337-TA-1411, redacted copies of which are provided as exhibits to this supplemental declaration.

28. I reserve the right to supplement my opinions in the future to respond to any arguments raised by the owner of the '028 Patent and to take into account new information that becomes available to me.

29. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code. Signed on this 13th day of August, 2025.

Respectfully submitted,

Signed by:
ROBERT E. GROVE, PH.D.
76704E026020400...
Robert E. Grove, Ph.D.

APPENDIX A

APPENDIX A
MATERIALS CONSIDERED

All Materials Referenced in this Declaration, and other Relevant Materials, Including the Following:

Exhibit No.	Description
1001	U.S. Patent No. 11,697,028
1002	File history for U.S. Patent No. 11,697,028
1023	Levulan® Kerastick® (aminolevulinic acid HCl) for Topical Solution, 20%, Initial U.S. Approval: 1999, Revised 3/2010
1017	U.S. Patent No. 5,079,262
1014	U.S. Patent No. 6,223,071
1008	U.S. Patent No. 7,033,381
1009	Office Action dated March 23, 2021, from file history of Application No. 17/009,871
1010	Office Action dated October 25, 2021, from file history of Application No. 16/791,004
1004	U.S. Patent Publication No. 2005/0075703
1005	U.S. Patent Publication No. 2004/0068305
1016	Declaration of Michael Ehrenreich, MD
1021	Agostinis, P et al. Photodynamic Therapy of Cancer: An Update. CA Cancer J Clin.2011; 61(4): 250-281
1023	M. Gold, “Lasers and Light Treatments for Acne Vulgaris, Promising Therapies,” J. of Clinical Aesthetic Dermatology, Vol. 1, No. 3, pp. 28-34, at 29 (Sept. 2008)
Petition	April 30, 2024, Petition for <i>Inter Partes</i> Review of U.S. Patent No. 11,697,028
2033	<i>In Re Certain Photodynamic Therapy Systems, Components Thereof, And Pharmaceutical Products Used In Combination With The Same</i> , Investigation No. 337-TA-1411, Order No. 18: Construing Certain Claim Terms (March 4, 2025)
2050	Declaration of Nan Marie Jokerst, Ph.D.
2011	C. Michael Bourget, <i>An Introduction to Light-emitting Diodes</i> , HortScience, Vol. 43(7), pp. 1944-1946 (December 2008)
2013	Ndjiongue, Alain R. et al., <i>Visible Light Communications (VLC) Technology</i> , pp. 1-23 (June 2015)

APPENDIX B

CURRICULUM VITAE

ROBERT E. GROVE, PH.D.

28 GREY EAGLE CT.
PLEASANTON, CA 94566

EXECUTIVE SUMMARY

Business executive and entrepreneur with a career of over forty years in the medical laser industry. Proven ability to build successful companies from concept through acquisition. Exceptionally strong technical background combined with CEO-level business management experience. Global consultant to diverse clients including private equity, law firms and medical device companies. Particular expertise in implementing recent trends in the med-device space toward recurring revenues with both Rx and OTC dermatologic devices. Public and private Board experience as well as IP litigation and deposition.

PROFESSIONAL CORPORATE EXPERIENCE

ON Light Sciences, Inc. (2013 – 2016)

Executive Chairman

Directed start-up developing transparent gel patches for accelerated tattoo removal with short-pulse lasers. Raised seed-round funding and recruited world-renowned dermatologists for clinical trials. Acquired by Merz North America in August of 2016.

Intellectual Light, Inc. (2012 – 2017)

President and CEO

Founded start-up to develop and patent a novel low-cost laser diode source for OTC devices for medical and other applications, with emphasis on patent portfolio.

Once Again Me, Inc. (2011)

President and CEO

Founded start-up, raised \$300k in seed capital, developed an innovative OTC laser beauty device and associated patent applications. Acquired by TRIA Beauty, Inc. in Dec. 2011.

TRIA Beauty Inc. (2003 – 2010)**CEO '03-'08; CTO '09-'10**

Co-founded start-up to develop, manufacture and market consumer laser devices for permanent hair removal, acne and facial wrinkle treatment at home. Directed venture capital raise, grew worldwide sales to ~\$20M while CEO.

Coherent Star, Inc. (1999 – 2001)**President**

Expanded *LightSheer™* business as part of Coherent Medical. Managed over 100 employees with revenues in excess of \$50 million.

Star Medical Technologies, Inc. (1993 – 1999)**President and CEO**

Co-founded start-up to develop, manufacture and market the first successful Rx laser hair removal system (*LightSheer™*) that remains the gold standard today. Negotiated acquisition by Coherent in 1999 for \$65 million.

DermaCare, Inc. (1987 – 1990)**President and CEO**

Co-founded one of the first laser med-spas in the US; over \$2.5 million in domestic and foreign investment. Directed operation of two clinics in S. CA with over 400 patients/month.

Cooper LaserSonics, Inc. (1984 – 1987)**President, Laser Products Division**

Integrated copper lasers into newly formed Scientific and Industrial Division; identified research clinicians to spur new product development (e.g., laser treatment of port-wine hemangiomas).

Plasma Kinetics, Inc. (1981 – 1984)**President and CEO**

Co-founded world's first commercial copper vapor laser company. Raised funding, established manufacturing operations and led global marketing effort. Negotiated acquisition by Cooper LaserSonics in 1984.

Lawrence Livermore National Laboratory (1976 – 1981)**Project Leader**

Directed Copper Laser Development for the Atomic Vapor Laser Isotope Separation Program. Managed Ph.D. scientists and engineers developing world's largest laser pump source for pulsed dye laser uranium enrichment efforts at LLNL.

CONSULTING EXPERIENCE

QPC, Inc. (2024)

Business and technical consultant for high-power diode laser manufacturer, exploring opportunities for 1726-nm acne treatment systems.

Zerigo Health, Inc. (2021 - 2023)

Technical consultant for company with innovative UVB-LED home-use devices for treatment of psoriasis, eczema and vitiligo.

Arbonne International LLC (2014 – 2018)

Conceived, designed and developed, with outside firm, a novel home-use ultrasound device for enhanced application of topicals. Achieved over \$50 million in revenues during first two years on the market with \$2.5 M investment.

Apax Partners, LLP (2017)

Assisted private equity firm in evaluation of Syneron-Candela prior to its acquisition by Apax Partners.

JLE Associates (1990 – 1993)

Worked with two other laser experts to formulate plan for new laser business to be founded and owned by Hoya Corporation of Japan.

EXPERT WITNESS/DEPOSITION EXPERIENCE

Solta Medical, Inc. v. Lumenis Ltd. and Lumenis, Inc., 19-11600 (D. Mass 2021)

Served as technical expert witness in patent infringement litigation relating to aesthetic laser technologies, including providing deposition testimony, formal written opinions on claim construction, in-depth inspections of implicated laser systems and non-infringement and invalidity analyses regarding the same.

Lumenis LTD. and Pollogen LTD. (2019)

IPR2019-01180 and -01181. IPR proceedings before the Patent Trial and Appeal Board at the U.S. Patent and Trademark Office involving patents related to RF energy skin treatment apparatus and method.

Lutronic, Inc. (2018)

ITC Investigation 337-TA-1112. Certain Radio Frequency Micro-Needle Dermatological Treatment Devices and Components Thereof. Lead technical witness for company. Consulted on all aspects of invalidity and non-infringement, including developing theories of anticipation based on inherency and developing strategies related to obviousness.

Lumenis LTD. (2013)

Labor File 30125-07-10 (Tel Aviv – Jaffa), *Lumenis Ltd. vs. Karni et al.* Suit involved alleged theft of trade secrets relating to IPL devices for dermatology.

TRIA Beauty, Inc. (2009)

Deposed during litigation between Palomar Medical Technologies and TRIA Beauty alleging infringement of Palomar/MGH hair removal patents.

INDEPENDENT CORPORATE BOARD EXPERIENCE

Candesant Corporation (March 2019 – March 2023)

Independent Director for a venture-funded biotech company developing a safe, in-office, non-drug solution to excessive sweating.

IRIDEX Corporation [NASDAQ: IRIX] (Oct. 2018 – present)

Independent Director for an industry-leading ophthalmic laser manufacturer.
Member of Compensation Committee and Audit Committee.

Ellman International, Inc. (Dec. 2013 – Sept. 2014 acquisition by Cynosure, Inc.)

Independent Director for manufacturer of advanced radio-frequency products utilized around the world for precision surgical and aesthetic procedures.

CORPORATE ADVISOR/ADVISORY BOARD EXPERIENCE

American Society for Laser Medicine and Surgery, Inc.

Appointed to the Membership Committee (*2020 and 2021*). Appointed to the Nominating Committee by the ASLMS president, Eric Bernstein, MD (*2018*).

Elected to position of Industry Research and Development Representative (*1995 – 1998*); Elected to second term (*2008 – 2011*)

Appointed Exhibits Chairperson (*1994 – 1998*).

Joylux, Inc. (2017 – present)

Advisor to the CEO, shareholder of company developing and marketing through physicians the world's first home-use device for women's intimate wellness incorporating photobiomodulation and thermal energy.

RECENT PRESENTATIONS AND AWARDS AT PROFESSIONAL MEETINGS

American Society for Laser Medicine and Surgery Annual Meeting, Baltimore, April, 2024.

Recipient of the *Presidential Citation Award*, presented at the 2024 Annual Meeting.

American Society for Laser Medicine and Surgery Annual Meeting, Denver, February 2019.
Recipient of the *Presidential Citation Award*, presented at the 2019 Annual Meeting.

9th 5-Continent Congress, Lasers and Aesthetic Medicine, Barcelona, August 2018. “Will Vaginal Rejuvenation become the Largest Home-Use Device Market?”.

American Academy of Dermatology Annual Meeting, San Diego, February 2018. “Lessons in Entrepreneurship: What I’ve Learned as Founder or Co-founder of Seven Companies”.

EDUCATION

Postdoctoral training:

Head research associate, Research laboratory of Prof. Shaoul Ezekiel; MIT, 1976.

University: Ph.D. in Instrumentation (Field of laser applications); MIT, 1975.

M.S. in Aeronautics and Astronautics; MIT, 1971.

B.S. With Distinction in Engineering Physics; Cornell University, 1970. Graduated as salutatorian of engineering class (all EP, EE, ME, ChemE, CivE students).

PUBLICATIONS

1. R. E. Grove, F. Y. Wu, L. A. Hackel, D. G. Youmans and S. Ezekiel, “Jet-stream CW Dye Laser for High Resolution Spectroscopy”, *Appl. Phys. Lett.* **23**, 442 (1973).
2. F. Y. Wu, R. E. Grove and S. Ezekiel, “CW Dye Laser for Ultra-High Resolution Spectroscopy”, *Appl. Phys. Lett.* **25**, 73 (1974).
3. R. E. Grove, F. Y. Wu, and S. Ezekiel, “Frequency Stabilization of a CW Dye Laser”, *Opt. Engr.* **13**, 531 (1974).
4. F. Y. Wu, R. E. Grove and S. Ezekiel, “Measurement of the Resonance Fluorescence Spectrum under Monochromatic Excitation”, *Phys. Rev. Lett.* **35**, 1426 (1975).
5. R. E. Grove, F. Y. Wu, and S. Ezekiel, “Measurement of the Spectrum of Resonance Fluorescence from a Two-level Atom in an Intense Monochromatic Field”, *Phys. Rev. A* **15**, 227 (1977).

6. R.S. Hargrove, R. E. Grove and T. Kan, "Copper Vapor Laser Unstable Resonator Oscillator and Oscillator-Amplifier Characteristics", IEEE J. Quantum E. QE-15, 1228 (1979).
7. B. E. Warner, R. S. Anderson and R. E. Grove, "Large Bore Copper Vapor Laser", Digest of Technical Papers, Opt. Soc. of America, CLEOS Conf., 90, Feb. (1980).
8. R. E. Grove, "Copper Lasers Come of Age", Laser Focus 18, 45 (1982). Reprinted in Frontiers of Laser Technology, PennWell, Tulsa, OK (1985).

PATENTS

	Patent No.	Patent Title	Issue Date
1.	10,342,618	Self-contained, eye-safe hair-regrowth-inhibition apparatus and method	July 9, 2019
2.	10,342,617	Phototherapy device thermal control apparatus and method	July 9, 2019
3.	D794,784	Skin care device	August 15, 2017
4.	9,687,671	Optical sensor and method for identifying the presence of skin and the pigmentation of skin	June 27, 2017
5.	9,302,118	Phototherapy device thermal control apparatus and method	April 5, 2016
6.	9,172,210	Mount for semiconductor devices using conformable conductive layers, and method	October 27, 2015
7.	8,965,214	Manufacturing system and method using IR communications link	February 24, 2015
8.	8,792,527	Mount for semiconductor devices using conformable conductive layers, and method	July 29, 2014
9.	8,777,935	Optical sensor and method for identifying the presence of skin	July 15, 2014
10.	8,755,420	Failure protection apparatus and system	June 17, 2014
11.	8,728,063	Antimicrobial layer for optical output window	May 20, 2014
12.	8,681,829	Compression mount for semiconductor devices, and method	March 25, 2014
13.	8,551,104	Self-contained, diode-laser-based dermatologic treatment apparatus	October 8, 2013

14.	8,518,027	Phototherapy device thermal control apparatus and method	August 27, 2013
15.	8,512,322	Antimicrobial layer for optical output window	August 20, 2013
16.	8,340,144	Compression mount for semiconductor devices, and method	December 25, 2012
17.	7,981,111	Method and apparatus for the treatment of benign pigmented lesions	July 19, 2011
18.	7,452,356	Eye-safe dermatologic treatment apparatus	November 18, 2008
19.	7,413,567	Optical sensor and method for identifying the presence of skin	August 19, 2008
20.	7,250,045	Self-contained, eye-safe hair-regrowth-inhibition apparatus and method	July 31, 2007
21.	D535,746	Portable hair removal device	January 23, 2007
22.	7,118,563	Self-contained, diode-laser-based dermatologic treatment apparatus	October 10, 2006
23.	6,758,845	Automatic firing apparatus and methods for laser skin treatment over large areas	July 6, 2004
24.	5,835,518	Laser diode array packaging	November 10, 1998
25.	5,743,901	High fluence diode laser device and method for the fabrication and use thereof	April 28, 1998
26.	5,707,403	Method for the laser treatment of subsurface blood vessels	January 13, 1998
27.	5,527,350	Pulsed infrared laser treatment of psoriasis	June 18, 1996