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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARNOLD & RICHTER CINE TECHNIK GMBH & CO. BETRIEBS KG,
Petitioner,

v.

ROTOLIGHT LIMITED,
Patent Owner.

Case IPR2021-01497
Patent 10,197,258

DECLARATION OF ERIC BRETSCHNEIDER, PH.D.

ROTOLIGHT 2002
Arnold & Richter v Rotolight
IPR2021-01497

**Rotolight Ex. 2002
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TABLE OF MATERIALS CONSIDERED

Exhibit Number	Description
1001	U.S. Patent No. 10,197,258 (“258 Patent”)
1002	File History for U.S. Patent Application Serial No. 15/849,819 which issued as U.S. Patent No. 10,197,258
1003	U.S. Patent Application Publication No. 2012/0044374 A1 to Pohlert et al. (“Pohlert”)
1004	Showline SL PAR 155 ZOOM RGBW LED Luminaire Installation & User’s Manual (“Showline” or “Showline Manual”)
1005	U.S. Patent No. 8,632,208 to Choong (“Choong”)
1006	U.S. Patent No. 8,581,513 to Reinoso (“Reinoso”)
1008	Declaration of Mr. Michael Wood (“Wood Declaration”)
1010	Declaration of Mr. Martin Palmer (“Palmer Declaration”)
Paper 1	Petition for <i>Inter Partes</i> Review of U.S. Patent No. 10,197,258 Under 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 <i>et set</i> . (“Petition”)
Paper 8	Decision Granting Institution of <i>Inter Partes</i> Review 35 U.S.C. § 314, 37 C.F.R. § 42.4 (“Institution Decision”)
2003	<i>Curriculum Vitae</i> of Eric Bretschneider, Ph.D.
2004	Deposition Transcript of Michael Wood dated June 7, 2022

Exhibit Number	Description
2005	<i>Vitec Production Solutions, Inc. v. Rotolight Limited</i> , IPR2022-00261, Paper 8 (PTAB June 8, 2022)
2006	<i>Vitec Production Solutions, Inc. v. Rotolight Limited</i> , IPR2022-00262, Paper 7 (PTAB June 8, 2022)
2014	Deposition Transcript of Michael Wood dated June 8, 2022

I, ERIC BRETSCHNEIDER, HEREBY DECLARE:

1. I have been retained by counsel for Patent Owner Rotolight Limited (“Patent Owner” or “Rotolight”) in connection with the above-captioned *Inter Partes* Review (“IPR”) proceeding.

2. I submit this Declaration in the above-captioned proceeding to provide my expert opinion in support of Patent Owner’s Response to the Petition for IPR submitted by Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (“Petitioner”) of U.S. Patent No. 10,197,258 (the “’258 Patent”, EX1001).

3. I am being compensated at an hourly rate of \$475 for my time spent working on this IPR. My compensation is in no way dependent on the statements I set forth herein or the outcome of this proceeding. I hold no interest in either the Patent Owner (Rotolight Limited) or the Petitioner (Arnold & Richter Cine Technik GmbH & Co. Betriebs KG).

I. EXPERTISE

A. Professional Qualifications And Experience

4. I have almost thirty (30) years of experience with lighting and light emitting diodes (“LEDs”), including a comprehensive background on the full range of LED production technologies, including metal organic chemical vapor phase deposition (“MOCVD”) hardware/process, fabrication, LED chip and package

testing and reliability, optical design, thermal management, color conversion, and solid-state lighting (“SSL”) fixture/lamp design, integration, and reliability.

B. Education

5. I graduated in 1984 from high school at Admiral Farragut Academy as Valedictorian. I was a Battalion Executive Officer from the NJROTC program, was a member of the National Honor Society, participated in various sports and was a member of the school band.

6. In 1989, I graduated from Tulane University with a Bachelor’s Degree in Chemical Engineering. While at Tulane University, I was the Vice President of the AIChE Student Chapter. I was also a member of the Bursar Tau Epsilon Phi fraternity, the office manager of the Tulane University Video Access Center and a Member-at-Large of the Tulane Media Board. As an undergraduate student, I received a merit-based scholarship and received the highest grade in three different graduate level technical elective courses in the department.

7. I earned my Ph.D. in Chemical Engineering from the University of Florida in 1997, where my graduate work focused on development of optoelectronic devices, including novel silicon-based visible LEDs and sulfide-based thin film electroluminescent device (“TFELD”) structures and zinc selenide blue LEDs. While at the University of Florida, I was the President of the Aikido Club, the President of the Isshinryu Club, a Member and the President of the

Sports Club Presidents Council, and a SCUBA Instructor. I also developed the world's first crystalline silicon-based visible LEDs. Additionally, I tested and verified the efficacy of novel precursors for p-type doping of ZnSe materials in LED structures and was responsible for the modification, operation, and maintenance of the MOCVD system for the growth of wide bandgap compound semiconductor materials. I also trained post docs and graduate students in the theory, operation, and maintenance of MOCVD systems.

C. Career Overview

8. I am currently the Chief Technology Officer/Principal Consultant at EB Designs & Technology. In that capacity, I am responsible for, among other things, the design of solid-state lighting technologies for clients ranging from startup companies to Fortune 100 companies.

9. From February 2013 through August 2014, I worked as the Director of Engineering at HeathCo LLC. In that capacity, I was responsible for advanced technology/product development, strategic planning, product launches, product recall management and regulatory compliance related to solid state lighting, sensors, notifications, and control products. Under my leadership, HeathCo transitioned to a LED-based consumer product entity.

10. From October 2011 through January 2013, I was the Chief Engineer, ETi Lighting Research Institute, and VP of Research and Development at ETi

Solid State Lighting Inc. I was responsible for developing all technology and product roadmaps for markets in North America, China, Europe, and Japan.

11. From June 2008 through October 2011, I was employed at Lighting Science Group Corp., first as a Product Development Manager, and then as the Vice President of Research. As the Vice President of Research, I assembled and managed research and development teams for projects related to solid state lighting, including the optical, mechanical, and electrical design. I was directly responsible for modeling and determining product and component lifetimes based on the optical, thermal, mechanical, and electrical analysis with respect to intended operating environments. While at Lighting Science Group, I also served as the company's representative on industry standards committees related to SSL technology (LM79, LM80, TM21, etc.). As a Product Development Manager, I was responsible for developing solid state lighting products and served as the primary technical resource for all OEM customers. I also managed the group responsible for all product certifications and standards requirements including UL, FCC, CE, Energy Star and DLC, as well as IES lighting requirements for outdoor lighting products.

12. Between December 2004 and May 2008, I was employed at Toyoda-Gosei as the Head of Sales, where I was responsible for developing and managing existing LED die and package sales accounts for the Eastern region of North

America. I also served as the primary technical resource for all customers in North and South America, as well as Europe.

13. From December 2003 through November 2004, I was the Director of Solid State Lighting Engineering at Beeman Lighting. My responsibilities included leading the development of solid state lighting systems and materials with a focus on chip and board applications and devices. Additionally, I managed all intellectual property issues and worked with existing and potential customers to ensure new products met or exceeded their requirements and expectations. While at Beeman Lighting, I developed Red-Green-Blue (“RGB”) LED-based landscape lighting with minimal environmental impact.

14. From March 2003 through October 2003, I was employed as the Intellectual Property Manager for the University of South Florida, where I managed the Intellectual Property portfolio of over 100 active patents and patent applications for the University faculty.

15. Between April 1998 and August 2003, I was employed at Uniroyal Optoelectronics. From April 1998 to April 2001, I was the Team Leader of Epitaxial Materials & Characterization. In this capacity, I was responsible for the design and capital equipment selection for the Raw Materials storage and handling areas, Epitaxial Growth areas/facilities and Materials Characterization areas for a full visible spectrum LED fabrication facility. Between April 2001 and August

2003, I was promoted to the Director of IP of University Relations & Government Contracts. My responsibilities included MOCVD hardware modification, epitaxial process design and development, development and testing of new LED chip structures for both AlInGaP and GaN-based material systems. While at Uniroyal Optoelectronics, I developed one of the first commercial Ultraviolet (“UV”)/near UV LED products. In my role as Director of Government Contracts, I also authored a proposal for the DARPA SUVOS (Semiconductor Ultra-Violet Optical Source) program that was ranked second overall out of 34 entries.

16. Between October 1996 and April 1998, I was a Process Engineer at Emcore Corporation. There I was responsible for installation, materials demonstration, and production process qualification and transition into manufacturing of MOCVD systems in an ISO9000 manufacturing environment. Some of the processes that I developed included both Aluminum, Indium, Gallium, and Phosphorous (“AlInGaP”) and Gallium Nitride (“GaN”) based LED structures. I developed the MOCVD industry’s first comprehensive cost and throughput model for epitaxial growth processes. This model significantly reduced production costs and increased throughput across a variety of MOCVD processes.

D. Publications And Patents

17. I am listed as an inventor on at least 40 issued patents, and over 40 pending U.S. and international patent applications, including multiple patents in

the field of LED lighting electrical systems and controls. I have authored 13 publications and presented 34 presentations and seminars. For details thereon, please see the *curriculum vitae* filed concurrently herewith as EX2003.

E. Curriculum Vitae

18. Additional details of my background are set forth in my *curriculum vitae* (see EX2003), which provides a more complete description of my educational background and work experience.

19. Based on the above education and experience, I believe that I have a detailed understanding of the state of the art during the relevant period, as well as a sound basis for opining on how a person of ordinary skill in the art at that time would understand the technical issues in this case.

20. I am being compensated for the time I have spent on this matter at the rate of \$475 per hour. My compensation does not depend in any way upon the outcome of this proceeding. I hold no interest in the Patent Owner (Rotolight Limited) or the Petitioner (Arnold & Richter Cine Technik GmbH & Co. Betriebs KG).

21. On the basis of my education and the experience described above, I believe I am qualified to give the opinions set out herein.

F. Education

22. I graduated in 1984 from High School at Admiral Farragut Academy as Valedictorian. I was a Battalion Executive Officer from the NJROTC program, was a member of the National Honor Society, participated in various sports and was a member of the school band.

23. In 1989, I graduated from Tulane University with a Bachelor's Degree in Chemical Engineering. While at Tulane University, I was the Vice President of AIChE Student Chapter. I was also a member of the Bursar Tau Epsilon Phi fraternity, the office manager of the Tulane University Video Access Center and a Member-at-Large of the Tulane Media Board. As an undergraduate student, I received a merit-based scholarship and received the highest grade in three different graduate level courses in the department that I took as technical electives.

24. I earned my Ph.D. in Chemical Engineering from the University of Florida in 1997, where my graduate work focused on development of optoelectronic devices, including novel silicon-based visible LEDs and sulfide-based thin film electroluminescent device ("TFELD") structures and zinc selenide blue LEDs. While at the University of Florida, I was the President of the Aikido Club, the President of the Isshinryu Club, a Member and the President of the Sports Club Presidents Council, and a SCUBA Instructor. I also developed the world's first crystalline silicon-based visible LEDs. Additionally, I tested and

verified the efficacy of novel precursors for p-type doping of ZnSe materials in LED structures and was responsible for the modification, operation, and maintenance of the MOCVD system for the growth of wide bandgap compound semiconductor materials. I also trained post docs and graduate students in the theory, operation, and maintenance of MOCVD systems.

II. MATERIALS CONSIDERED

25. For purposes of this Declaration, I have reviewed and, where applicable, relied upon the information and/or teachings of the documents identified in the TABLE OF MATERIALS CONSIDERED following the TABLE OF CONTENTS above.

26. In particular, I have carefully considered the Petition, Declaration of Michael Wood (“Wood Declaration”) (EX1008), and the Declaration of Martin Palmer (“Palmer Declaration”) (EX1010), and all references cited therein, even if inadvertently omitted from my Table of Materials Considered above.

27. I also base my opinions on my professional and academic experience.

28. The opinions to which I will testify, if asked, are set forth in this Declaration. My opinions in this Declaration are based upon the information that I have received to date.

A. Reservation of Rights

29. My opinions may be supplemented or modified if additional information is received.

30. This Declaration and my opinions are based on knowledge and information currently available to me. I reserve the right to supplement the opinions set forth in this Declaration to the extent that additional information becomes available or if I am asked to consider additional information. Further, I reserve the right to consider and comment on any statements or opinions rendered by any declarants in this matter.

III. LEGAL PRINCIPLES USED IN THE ANALYSIS

31. While I am neither a patent lawyer nor an expert in patent law, I have been informed of the applicable legal standards for patent invalidity. I have relied upon these legal principles, as explained to me by counsel, in forming my opinions set forth in this Declaration.

32. I understand that a petitioner in an *inter partes* review proceeding must prove unpatentability by a preponderance of the evidence. The statements below are my understanding regarding the law. I have used my understanding of these legal principles, as set forth in this section, to analyze the '258 Patent.

33. It is my understanding that a patent can be found invalid for several reasons. It is my understanding that these reasons include, among others: (i) being

anticipated by the prior art; or (ii) being obvious in view of the prior art. My understanding of each of these bases for invalidity is discussed in greater detail below.

34. I understand that in undertaking an invalidity analysis, the claims are to be interpreted from the perspective of a person of ordinary skill in the art (“POSITA”) at the time of the effective filing date of the patent. The analysis I discuss throughout this report is intended to reflect these parameters even if, *e.g.*, I use the present tense.

A. Anticipation

35. I understand that one way to show that a patent claim is invalid is to show that the claim is anticipated by a prior art reference. I understand this to mean that the patent claim is not new or novel in view of the prior art.

36. I further understand that to determine whether a prior art reference anticipates a patent claim requires a comparison of the claim language to the prior art on a limitation-by-limitation basis. I have been informed that a prior art reference “anticipates” under 35 U.S.C. § 102 and renders a patent claim invalid if all of the claim’s limitations are expressly or inherently disclosed in that single prior art reference. The disclosure in the prior art reference does not have to use the same words as the claim, but all of the requirements of the claim must be expressly or inherently present.

37. I have been informed of the scope of prior art that can be used in an anticipation analysis as set forth in 35 U.S.C. § 102. In particular, I understand that a patent or publication qualifies as prior art to an asserted patent claim if it was published prior to the invention of the asserted patent claim or more than one year before the filing date of the application of the asserted patent. I further have been informed that a patent issued on a patent application filed before the invention of the asserted patent claim also is prior art to the asserted patent claim.

38. I understand that a prior art reference anticipates a patent claim when the claim limitations are not expressly found in that reference, but the claim limitations are nonetheless inherent in it. I understand that express disclosure means that the subject matter is clearly described in the prior art reference.

39. I understand that a limitation or the entire invention is inherent and in the public domain if it is the natural result flowing from the explicit disclosure of the prior art. I understand that for a claimed element to be inherently present within a prior art document, it must be necessarily present. That is, the prior art reference must necessarily function in accordance with or include the claimed element. I understand that inherency may not be established by probabilities or possibilities—the mere fact that a certain thing may result from a given set of circumstances is not sufficient.

40. I understand that in some cases, the inherent property corresponds to a claimed new benefit or characteristic of a purported invention otherwise in the prior art. I understand that in such circumstances, the new realization alone does not render the old invention patentable. I further understand that when a prior art method is at issue, the inherent anticipation examines the natural and inherent results in that method without regard to the full recognition of those benefits or characteristics within the art field at the time of the prior art disclosure.

B. Obviousness

41. I have been informed that a patent claim is invalid as being obvious in view of the prior art if the differences between the patented subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. *See* 35 U.S.C. § 103. In making a determination of obviousness, I understand that the following factors are analyzed: (i) the scope and content of the prior art, (ii) the differences, if any, between the prior art and the claims at issue, (iii) the level of ordinary skill in the pertinent art, and (iv) objective evidence of non-obviousness, if any exists.

42. I have been informed that any of the following rationales are some of the acceptable bases for the conclusion that a claim is obvious: (i) the claimed invention is simply a combination of prior art elements according to known methods to yield predictable results, (ii) the claimed invention is a simple

substitution of one known element for another to obtain predictable results, (iii) the claimed invention uses known techniques to improve similar devices (methods, or products) in the same way, (iv) the claimed invention was “obvious to try” because it was a choice from a finite number of identified, predictable solutions, with a reasonable expectation of success, (v) there is known work in one field of endeavor that may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces, if the variations would have been predictable to a POSITA, or (vi) there is some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art references or to combine prior art reference teachings to arrive at the claimed invention.

43. I have been informed that in order for a patent claim to be considered obvious, at the time the invention was made, each and every limitation of the claim must be present within the prior art, or within the prior art in combination with the general knowledge held by a POSITA, and that such a person would have a reasonable expectation of success in combining these teachings to achieve the claimed invention. I also understand that the reason to select and combine features, the predictability of the results of doing so, and a reasonable expectation of success of doing so may be found in the teachings of the prior art themselves, in the nature of any need or problem in the field that was addressed by the patent, in

the knowledge of a POSITA in the field at the time, as well as in common sense or the level of creativity exhibited by a POSITA. There need not be an express or explicit suggestion to combine references.

44. I understand that substituting one known element for another known element would have been obvious when it leads to reasonably predictable results.

45. I understand that a combination of elements would have been obvious when a POSITA has a good reason to pursue the combination, which is among a finite number of known options within his or her technical grasp, and leads to reasonably expected results.

46. A prior art reference can be said to teach away when a POSITA would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken in the claimed invention. The mere disclosure of more than one alternative does not constitute a teaching away from alternatives that are not disclosed when the prior art does not criticize, discredit, or otherwise discourage the solution claimed in the alleged invention. Similarly, a prior art reference that merely expresses a general preference for an alternative invention does not teach away.

C. Public Accessibility Of Prior Art Reference

47. I understand that in order to be considered as prior art, a reference needs to be publicly accessible before the priority date of the patent-at-issue. I

understand that public accessibility requires more than technical accessibility.

Specifically, I understand that in some cases, such as cases involving references published online, public accessibility hinges on whether an interested skilled artisan, using reasonable diligence, would have found the resource online.

Accordingly, I understand that the critical question for public accessibility is whether a POSITA would have been independently aware of a reference's existence and would have reasonably been able to find the reference. I understand that the burden of showing that a reference was publicly accessible rests with the Petitioner.

48. I have relied upon this understanding of the applicable legal standards in reaching my opinion set forth in this Declaration

IV. PERSON HAVING ORDINARY SKILL IN THE ART ("POSITA")

49. I understand that an assessment of the claims of the '258 Patent should be undertaken from the perspective of what would have been known or understood by a POSITA as of the earliest claimed priority date of the patent claims, which I have assumed is April 8, 2016.

50. Counsel has advised me that to determine the appropriate level of one of ordinary skill in the art, I may consider the following factors: (a) the types of problems encountered by those working in the field and prior art solutions thereto, (b) sophistication of the technology in question, and the rapidity with which

innovations occur in the field, (c) the educational level of active workers in the field, and (d) the educational level of the inventor.

51. The relevant technical field for the '258 Patent is lighting systems, in particular involving lighting effects used in cinematography. Based on this, and the four factors above, in my opinion a POSITA as of April 8, 2016 would have had the equivalent of a Bachelor's degree in electrical or chemical engineering with 2 to 5 years of working experience in the design of entertainment lighting systems. Additional education, such as a Master's degree in electrical or chemical engineering, could substitute for some of the work experience, and similarly, extensive experience in the field could serve as a substitute for formal education.

52. My opinions regarding the level of ordinary skill in the art are based on, among other things, my extensive experience in the relevant field, my understanding of the basic qualifications that would be relevant to an engineer tasked with investigating the methods and devices in the relevant area, and my familiarity with the backgrounds of colleagues, co-workers, and employees, both past and present, who work in that area.

53. Although my qualifications and experience exceed those of the hypothetical POSITA defined above, my analysis and opinions regarding the '258 Patent are based on the perspective of a POSITA as of April 8, 2016.

54. Further, I understand that Petitioner and its expert, Mr. Wood, posit that a POSITA “would have had a good working knowledge of electrical engineering and entertainment lighting systems, controls, and effects.” Petition, 7; EX1008, ¶36. The Petition and the Wood Declaration further opine: “[s]he would have gained this through an undergraduate Bachelor’s degree in electrical engineering, or a comparable field, as well as some experience in the field (*e.g.*, in entertainment lighting systems).” *Id.*

55. While I prefer my definition, my opinions herein regarding the understanding of a POSITA and my other opinions set forth herein would remain the same under Petitioner’s definition of a POSITA. Also, I would qualify as a POSITA under Mr. Wood’s definition based on my extensive background in entertainment lighting systems, controls, and effects, including particularly the electrical components and circuitry used in entertainment lighting, and a degree in a comparable field in this area, along with all of my other credentials identified above. *See also* EX2004, 46:1-48:13 (explaining that a particular degree is not required but a POSITA must have knowledge of the internal workings of the lighting device).

V. U.S. PATENT NO. 10,197,258

56. U.S. Patent No. 10,197,258 (EX1001) (“the ’258 Patent”), entitled “Lighting System and Control Thereof,” which issued on February 5, 2019, was

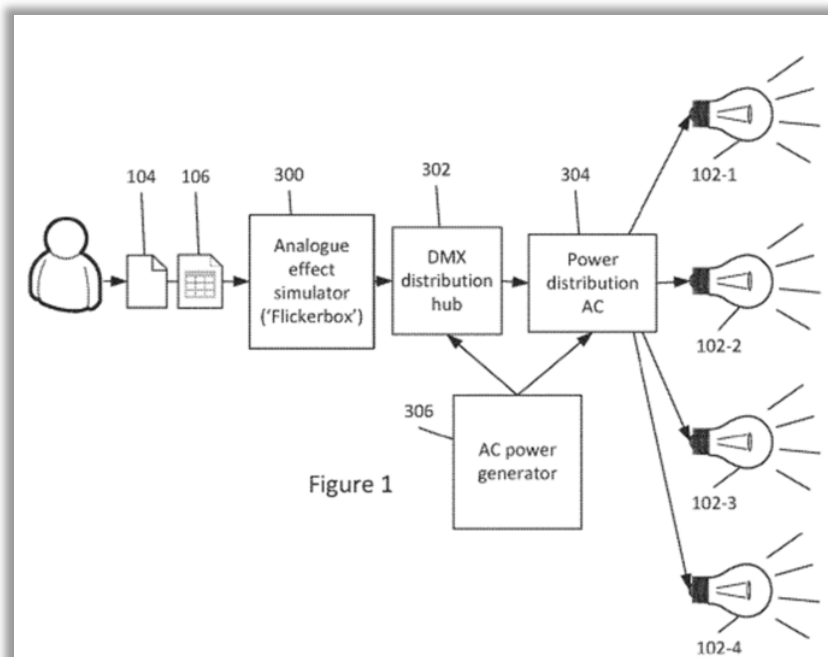
filed as U.S. Patent Application Serial No. 15/849,819 (“the ’819 Application”) on December 21, 2017, which was a continuation of U.S. Patent Application Serial No. 15/481,460 filed on April 7, 2017, which application claims priority to foreign Application GB 1606907.2 (“the ’907 Application”) filed on April 20, 2016, which claims priority to U.S. Provisional Application No. 62/319,809 (the “Provisional Application”) filed on April 8, 2016.

57. I understand that Rotolight Limited is the Assignee of the ’258 Patent and Roderick Allen Gammons, Andrew Francis, Roderick Aaron Gammons, and Stefan Lange are the named inventors.

A. Specification

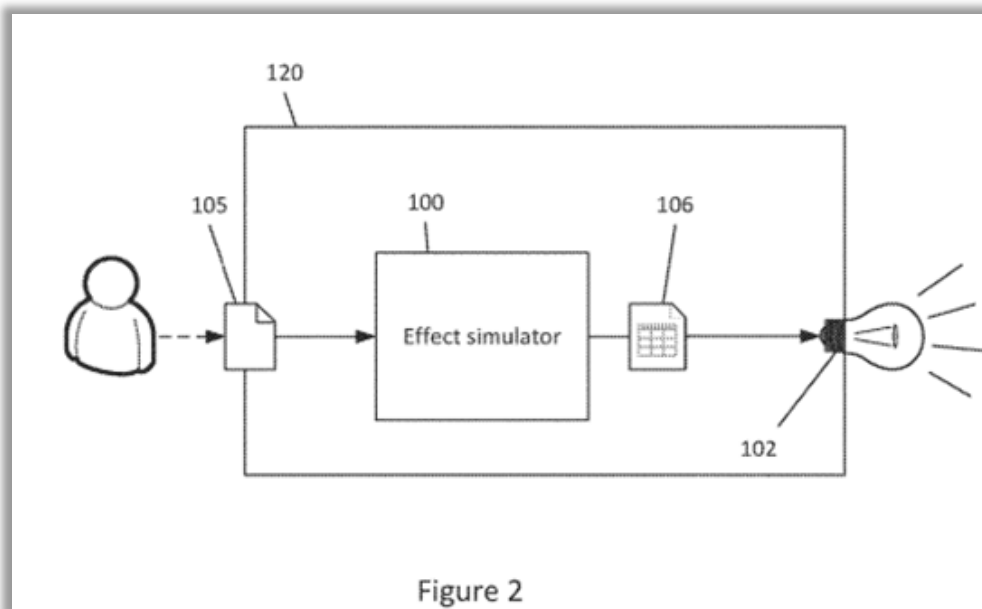
58. The ’258 Patent generally describes a lighting system and a method of controlling a lighting device. *See* EX1001, Abstract. In particular, the ’258 Patent relates to “a lighting system for videography, broadcasting and cinematography.” EX1001, 1:17-20. The ’258 Patent explains that in the film, broadcast and TV industry, there is an apparatus called a “flicker box” which is provided independently of the lighting device(s) to mimic flickering light such as a fire place, candle, electrical spark or lightning. EX1001, 1:21-26. Use of a flicker box is a “complex, costly and time consuming process that requires the setup, connection and control of multiple pieces of hardware typically including external Digital Multiplex (DMX) and power distribution devices.” EX1001, 1:30-35.

Flicker boxes also require specialists. EX1001, 1:36-38. FIG. 1 of the '258 Patent shows this conventional arrangement:



EX1001, FIG. 1.

59. The '258 Patent discloses an improved lighting system that involves controlling the lighting device to produce a user customizable lighting effect that is time varying. EX1001, 1:46-51. As shown in FIG. 2, the '258 Patent provides a single studio lamp device 120 with an integrated light 102 and a lighting effect simulator 100. EX1001, 5:64-66, FIG. 2.



EX1001, FIG. 2.

60. This arrangement allows for the DMX distribution hub and more complex circuitry associated with a “flicker box” to be dispensed with, and yet also provides more flexibility in producing lighting effects. EX1001, 5:61-6:3.

61. This flexibility is provided in the lighting system by providing a control panel 104 that includes, *e.g.*, buttons, knobs, sliders or a digital interface for user input of parameters for simulating an effect. EX1001, 6:4-8. The lighting system includes an effect simulator integrated into the lamp device 120 for performing calculations such as how the lighting changes over time in order to produce the desired lighting effect. EX1001, 5:61-6:3, 7:42-53, 10:4-8, FIG. 4. This combination of a user interface, effect simulator (which calculates the time

varying lighting value), and lighting device introduces a simpler, less expensive, and more flexible system. *See* EX1001, 6:4-20.

62. The effect simulator described in the '258 Patent calculates time varying lighting values using simulation parameters. *See* EX1001, 6:4-8, 7:29-38, 10:27-11:39. The simulation parameters may be input by a user via a user interface. *See* EX1001, 7:17-20, 10:9-12. To generate the effects described, the '258 Patent discloses calculating (*e.g.*, using an algorithm) time varying lighting values to generate the lighting effects, with simulation parameters representing inputs into the calculation, and time varying lighting values representing the output therefrom. EX1001, 10:13-61.

B. Prosecution History

63. I have reviewed and analyzed the prosecution history of the '258 Patent. *See generally* EX1002. The Examiner did not provide any rejections based on prior art references. On September 26, 2018, the Examiner issued a Notice of Allowance. EX1002, 593-600. The Notice of Allowance indicated that “[t]he prior art fails to teach or fairly suggest ... ‘an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter.’” EX1002, 598.

C. Claims Of The '258 Patent

64. Petitioner has challenged all 22 claims of the '258 Patent (the “Challenged Claims”). Independent claim 1 recites a lighting system and is the only independent claim of the '258 Patent. EX1001, 11:59-12:12.

VI. GROUND SUMMARY

65. I understand that a Petition for *Inter Partes* Review was filed against claims 1-22 of the '258 Patent on September 3, 2021 (IPR2021-01497) (Paper 1), and that on March 16, 2022, the Patent Trial and Appeal Board (“PTAB”) instituted *inter partes* review proceedings (Decision Granting Institution of *Inter Partes* Review in IPR2021-01497 (Paper 8)). I understand that this Petition seeks cancellation of claims 1-22 of the '258 Patent on the following grounds:

Ground	Claims	Basis for Rejection
1a	1-6, 8-14, 16-22	§§ 102/103: Showline Manual (EX1004)
1b	7	§ 103: Showline Manual in view of Choong (EX1005)
1c	15	§ 103: Showline Manual in view of Reinoso (EX1006)
2	1-22	§§ 102/103: Pohlert (EX1003)

See Petition 3-4; Institution Decision, 7, 19.

VII. CLAIM CONSTRUCTION

66. I understand that in interpreting claims, I should consider the literal language of the claim at issue, as well as the language of other claims, the

specification, and the prosecution history of the underlying claims. I also understand that the words of a claim should be given their ordinary meaning as understood by those of skill in the art, unless it is clear from the specification or prosecution history (or both) that a different meaning was intended.

67. I understand that Petitioner takes the position that no claim constructions are necessary. Petition, 7. For purposes of this Declaration and in relation to the invalidity arguments raised by Petitioner, I have analyzed the claims under their ordinary meaning as understood by a POSITA. I do not believe that any formal constructions are necessary.

VIII. SCOPE AND CONTENT OF PRIOR ART RELIED ON BY PETITIONER

A. Summary Of Showline

68. Showline is an Installation & User's Manual for the Showline SL PAR 155 Zoom RGBW LED Luminaire ("Showline" or "Showline Manual"). EX1004, cover. Showline discloses a LED lighting fixture (*i.e.*, the SL PAR 155) and an LCD Display / Menu System. EX1004, 7. The LCD Display and Menu System is built into the SL PAR 155 Luminaire and allows users "local control for accessing" certain features, including "Presets (Standard and User Defined)," and "Effects (Chases – preloaded and user defined)." EX1004, 14.

69. Showline defines "Presets" as "stored values of the luminaire's LED settings that can be recalled via the menu system or DMX." EX1004, 15.

Showline defines “Effects” as: “Effects are chases stored values of the luminaire’s LED settings that can be recalled via the menu system or DMX.” EX1004, 16. Accordingly, “Presets” and “Effects” are both pre-recorded lighting sequences that are stored in the Showline SL PAR 155 and recalled and replayed as desired.

70. Showline further discloses parameters of the “Presets” and “Effects” that can be adjusted to “customize” the effect produced. EX1004, 15. The adjustable parameters of the effects are “master intensity, speed, and fade values,” as well as color. EX1004, 16-17.

B. Summary Of Choong

71. Choong generally discloses a method of creating lighting of white color with the intended correlated color temperature (“CCT”). EX1005, Abstract. Choong utilizes different groups of lights that fall in different CCT ranges. *Id.*

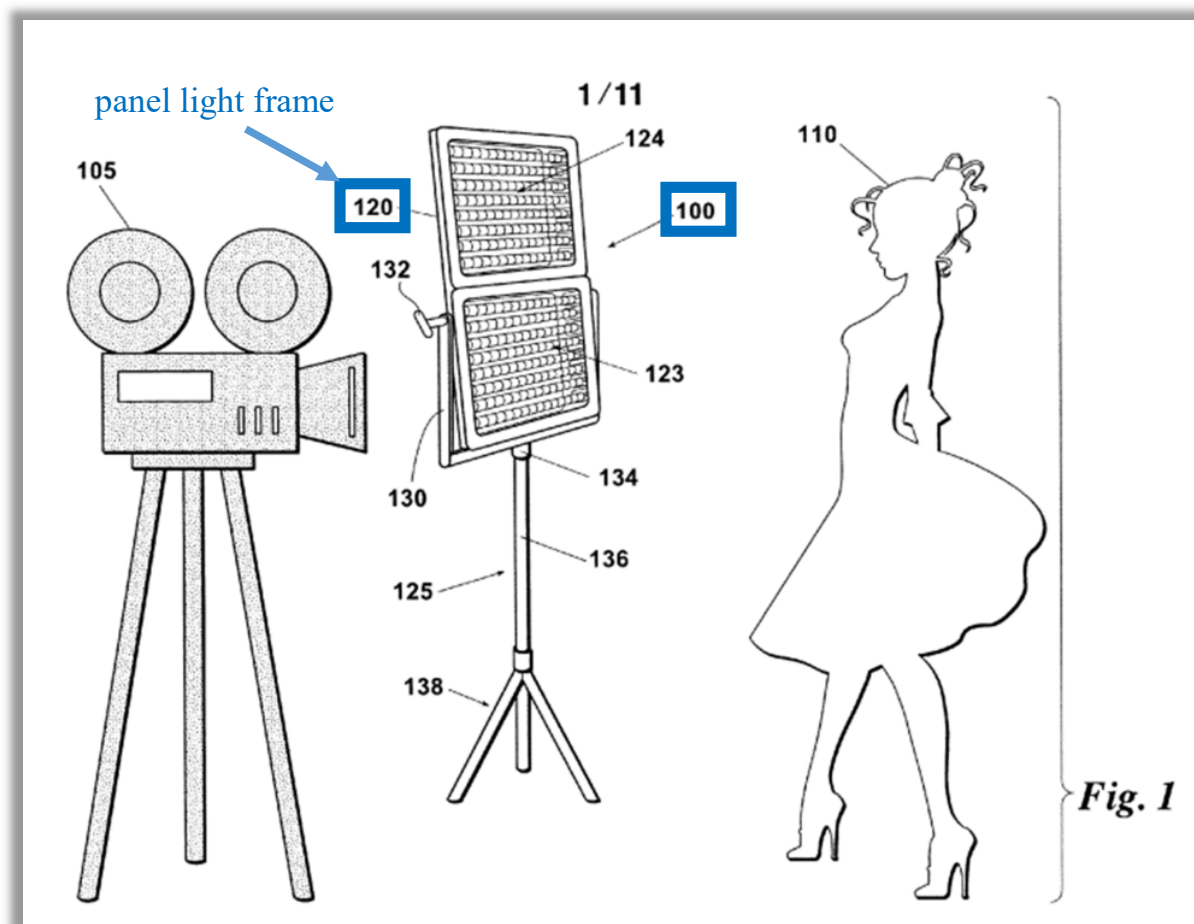
C. Summary Of Reinoso

72. Reinoso generally discloses a DMX based wireless lighting system with multiple modules. EX1006, Abstract. Reinoso discloses that a processor “can independently control [] *pre-selected* lighting effects, channels, addresses, programs and other light effect features.”¹ *Id.*

¹ Unless otherwise noted, I added all emphasis in quotations throughout this Declaration.

D. Summary Of Pohlert

73. Pohlert discloses a lighting apparatus with a panel light frame. *See* EX1003, Abstract. FIG. 1 shows an embodiment of the “inventive” light 100:



EX1003, FIG. 1 (annotated), ¶[0052].

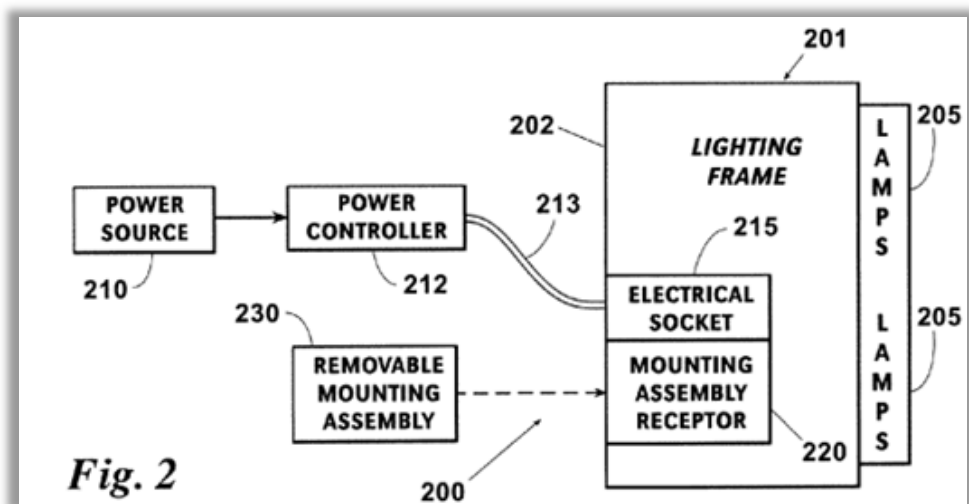
74. As shown in FIG. 1, “a video camera 105 might be directed towards a subject 110 that is being illuminated by inventive light 100.” EX1003, ¶[0052].

“[T]he camera 105 might use film, video tape, or solid-state image capture

circuitry (e.g., CCDs) and may be a still photography camera, a motion picture camera, or some combination of the two.” *Id.*

75. Pohlert discloses the inventive light 100 preferably utilizes a panel light frame 120 that includes LED lights or other light elements. *See* EX1003, Abstract, ¶¶[0050], [0052]. This “panel-type arrangement” of lighting elements is preferred to provide even lighting on the subject. *See* EX1003, ¶[0055] (explaining the relative even lighting in the context of FIG. 4, which is preferred to uneven lighting).

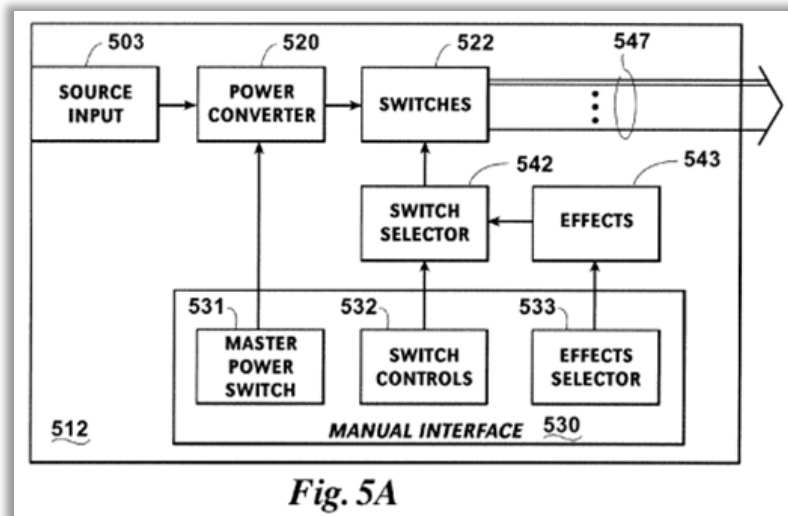
76. FIG. 2 provides the general diagram of the lighting effects system 201:



EX1003, FIG. 2.

77. Pohlert provides “the LEDs or other low power lamps 205 may be...powered by a power source 210 controlled by a power controller 212” as shown in FIG. 2. EX1003, ¶[0057]. FIGS. 5A and 5B of Pohlert provide

additional details of two types of power controllers. EX1003, ¶[0058]. FIG. 5A is reproduced here for convenience of explanation:



EX1003, FIG. 5A.

78. Pohlert explains that FIG. 5A shows one type of power controller. EX1003, ¶[0058]. This controller includes a power source input 503, power converter 520, and a plurality of switches 522, “which may be solid state devices (e.g., transistors) or analog devices (e.g., relays)” to control the power output via wires 547. “A switch selector 542 controls the on/off state [of] each switch (or group) in the set of switches 522,” and “[a] manual interface 530 is provided to allow operation of the switches.” EX1003, ¶¶[0058]-[0059]. The manual interface may include manual switches, buttons, knobs, or other manual input means for controlling each switch or groups of switches. *See id.*, ¶[0059]. For example, a manual input such as a knob could select between different groups of light

segments 325, 330, 335, 340, 345, 350, 355, 360. *See id.*; *see also id.*, FIG. 3B (showing the LED light segments).

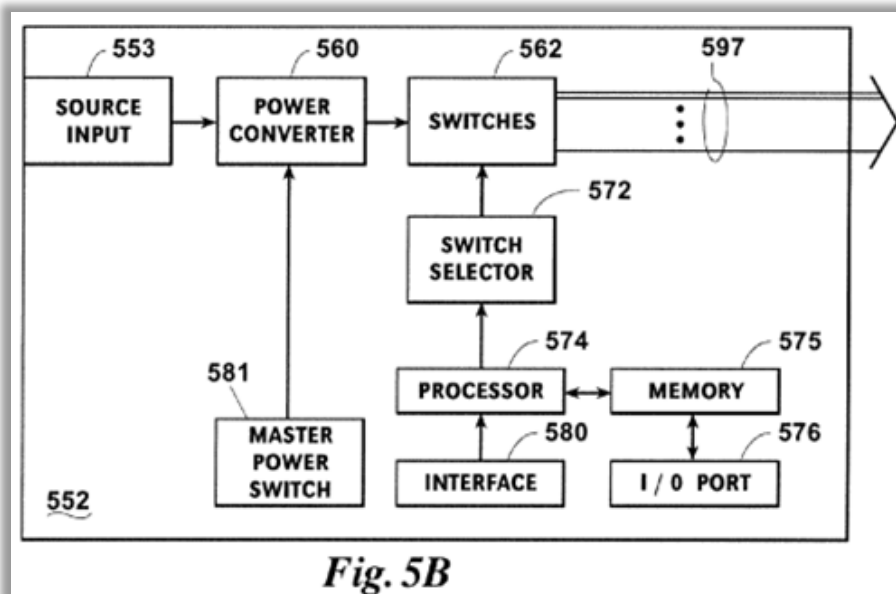
79. Pohlert discloses an effects generator 543 that may optionally be included along with an effects selector 533, which is part of the manual interface. EX1003, ¶[0061]. The effects generator 543 can provide various lighting effects such as dimming, strobing, or pattern generation. *Id.*

80. Pohlert explains that dimming may be accomplished using a manual control knob or a multi-position switch on the effects selector 533. EX1003, ¶[0061].

81. Pohlert explains that strobing may be accomplished “by generating an oscillating signal and applying it as a control signal either upstream or downstream from the switch selector 542.” EX1003, ¶[0062]. The frequency of oscillation may be selectable via a manual knob as part of the effects selector 533. *Id.*

82. Pohlert explains pattern generation “may be accomplished by, e.g., manual selection from a number of predefined patterns or else through an interface allowing different pattern sequencing.” EX1003, ¶[0063]. Patterns may include strobing or flashing different groups of light segments 325-360 in a pre-defined sequence or a pseudo-random sequence. *Id.*

83. FIG. 5B of Pohlert shows “another example” of a power controller 552 that may be used in Pohlert’s lighting system. EX1003, ¶[0065].



EX1003, FIG. 5B.

84. The FIG. 5B embodiment does not include the effects simulator 533 or effects generator 543, but instead includes a processor 574 and a switch selector 572. EX1003, FIG. 5A-5B, ¶[0065]. The processor 574 interfaces with memory 575 to access programming instructions. EX1003, ¶[0066]. An interface 580 is provided for programming or otherwise interfacing with the processor, or manually selecting various lighting effects. *Id.* The processor 574 “reads instructions from the memory 575 and executes them in a conventional manner,” which controls the switch selector 572 and ultimately the downstream lights. EX1003, ¶[0067].

85. Notably, Pohlert describes that the processor 574 is specifically pre-programmed to provide dimming, strobing, or pattern generation using pre-defined or pseudo random sequences. EX1003, ¶[0067].

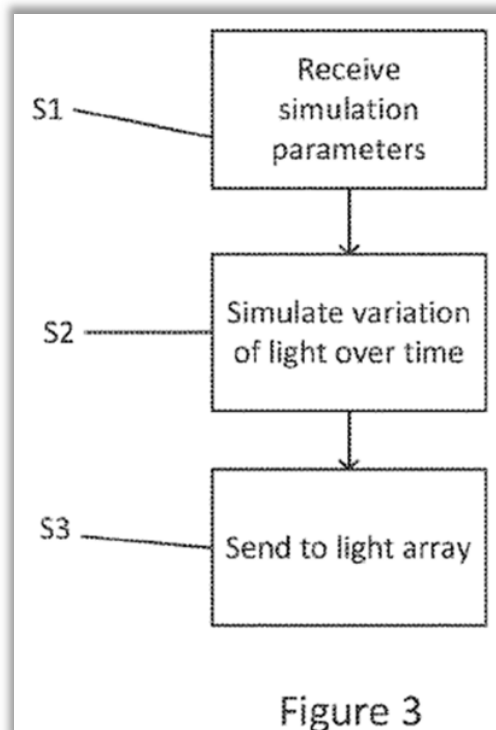
**IX. THE '258 PATENT IS VALID OVER SHOWLINE AND POHLERT
BECAUSE PETITIONER FAILS TO PROPERLY ADDRESS THE
CALCULATING LIMITATION**

86. Before turning to the specific Grounds and a more detailed explanation of particular claim limitations relative to the prior art, there is one important claim recitation that I believe merits an initial, collective discussion as it distinguishes over both the Showline and Pohlert Grounds.

87. The sole independent claim of the '258 Patent, independent claim 1, requires “an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter.” EX1001, cl. 1.

88. I do not believe that this limitation is present in Showline or Pohlert. In my opinion, the Petition and Wood Declaration fail to address the plain meaning of this phrase as it would have been understood by a POSITA in view of the specification and drawings of the '258 Patent.

89. The specification of the '258 Patent describes the calculating step, stating that “[t]he simulation calculates how the lighting changes over time in order to produce the desired lighting effect.” EX1001, 7:42-47. This calculating step is further embodied in the flow chart in FIG. 3:

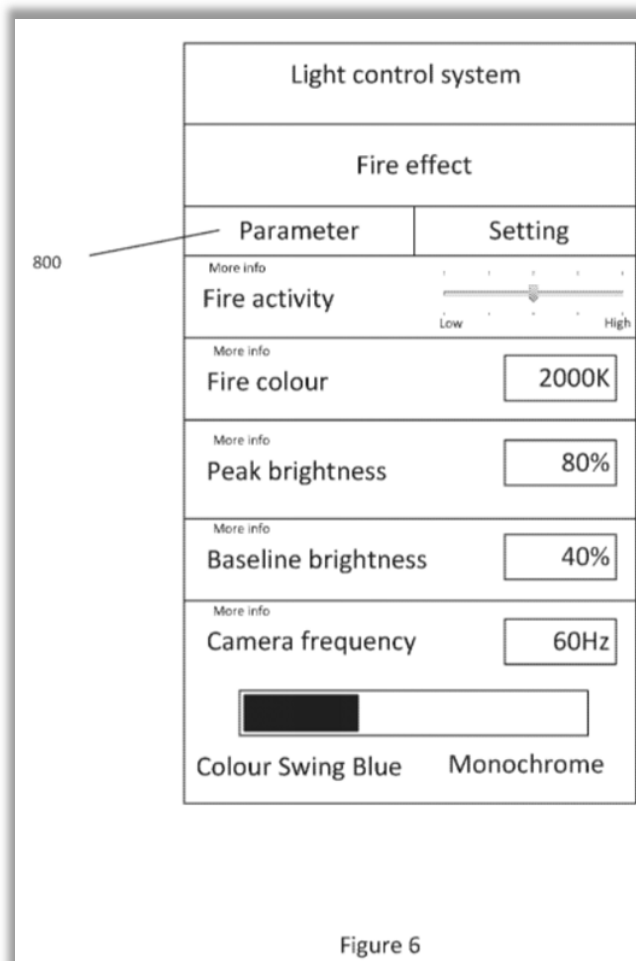


EX1001, FIG. 3.

90. As shown above, the lighting device first receives simulation parameters and simulates the variation of light over time by “calculat[ing] a time varying lighting value based on at least one simulation parameter.” EX1001, cl. 1; *see also id.*, 6:1-3, 8:41-43, 10:4-8. Critically, this ties the claimed “calculating” step directly to input of a received simulation parameter (*i.e.*, the calculating is “based on at least one simulation parameter”) and to the output of a “time varying” lighting value.

91. Figure 6 of the ’258 Patent illustrates an embodiment of a control panel that receives user input of a parameter to customize a lighting effect, which

is helpful to illustrate the meaning of the “calculating” limitation of independent claim 1:



EX1001, FIG. 6.

92. In the example shown in Figure 6, the customized lighting effect is a “Fire effect.” The user is able to input a “simulation parameter,” such as fire color or peak brightness. The “time varying lighting value” is calculated by the lighting effect simulator 100 based on at least that simulation parameter. EX1001, 8:41-43.

93. The '258 Patent discloses and claims an effect simulator adapted to *calculate a time varying lighting value* based at least on a simulation parameter. EX1001, 8:26-50, cl. 1. In the context of the above, as an example, assume that the “simulation parameter” is “peak brightness” and the user input is “80%.” This means that the effect simulator must use the simulation parameter to calculate a time varying lighting value, *i.e.*, use the “80% brightness” as a simulation parameter input to a calculation that outputs a time varying lighting value. Notably, recalling a pre-stored lighting pattern or replaying a pre-defined lighting effect does not satisfy this claim language.

94. Figure 7 demonstrates an example with the brightness varying over time generated algorithmically by the effect simulator disclosed in the '258 Patent. EX1001, 10:44-61. In particular, the '258 Patent provides an example of a fire-effect-generating algorithm that calculates such a brightness-over-time pattern:

Fire is simulated as a series of “sparks”. Each spark has the following random parameters:

Interval: New sparks are generated at an interval which varies randomly between a defined maximum and minimum interval.

Peak: The peak luminance of each spark varies randomly between a defined minimum and maximum.

Ramp-up time: The luminance of each spark ramps up to the peak at a randomly generated rate.

Fade-down time: The fade from the peak is linked to the ramp-up time but is much slower—simulating the gradual decline in luminance of a burning ember.

EX1001, 9:56-67.

95. A series of sparks is generated sequentially to produce a realistic fire simulation, according to an algorithm like the one described below:

At the end of a spark up and down period:

Reset duration for next spark to between 2.5 s to 5 s

Generate new brightness targets for the next spark between 12.5% and 100% of current maximum brightness setting.

Offset the random brightness targets by the requested brightness floor value

Set the new peak brightness target for the new spark

Ensure the new targets are greater than the existing faded brightness value to prevent downward jumps

Set the fade direction to UP

Start new animation frame:

Calculate brightness fade step sizes:

Fade up fast, progressively larger fade step sizes

Change fade direction at peak

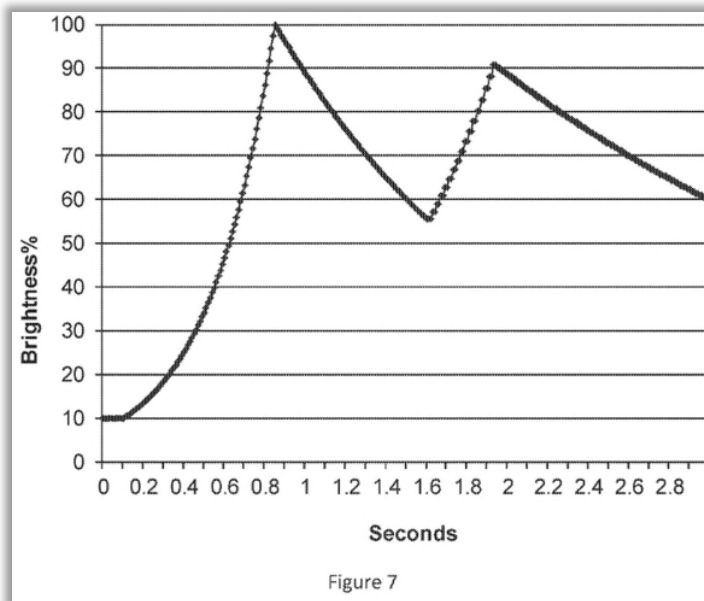
Fade down slow, progressively smaller fade step sizes

Set the frame rate for the new spark to a random value

prevent the curtailment of a long fade by a new short pulse: if the faded brightness is still >25% of max then don't allow new FramePeriod to be less than old.

EX1001, 10:23-43.

96. In the above algorithm, the effect simulator *calculates a time varying lighting value* based on the various simulation parameters, including any simulation parameters input by the user. The '258 Patent provides an example of a time varying lighting value, calculated by the effect simulator, in Figure 7:



EX1001, FIG. 7.

97. The '258 Patent further explains “[t]he lighting effect simulator typically cycles round a loop calculating new lamp brightness and colour values.”

EX1001, 10:4-5.

98. Performing a calculation in this manner using an algorithm generates more controllable and realistic-looking fire effects than replaying a pre-recorded set of values chosen to mimic a fire. In particular, “[g]enerating the light output with the simulation provides a greater level of user adjustment and control than that produced by simply sampling the intensity of a real flame and replaying it at different speeds.” EX1001, 10:17-20. An effect generated by the algorithm described in the '258 Patent is characterized by a continuous stream of sparks,

where “each spark has a different speed, duration, and peak – simulating the look of a real flame.” EX1001, 10:14-16.

99. Critically, the '258 Patent is not simply recalling a stored lighting value or set of stored lighting values and adjusting them to create variations of effects. When the effect simulator disclosed in the '258 Patent generates a lighting effect, it does so by *actively calculating time varying lighting value* based on a simulation parameter, not by *passively replaying* an existing lighting effect stored in memory.

100. Further, the '258 explicitly describes the advantages of an actively simulated fire effect over a passively replayed fire effect: controllability and realism. EX1001, 10:17-20. Here, the '258 Patent compares the disclosed fire effect algorithm with “sampling the intensity of a real flame and replaying it at different speeds.” *Id.*

101. In contrast, in the Showline and Pohlert references, pre-defined lighting effect patterns are stored and then recalled. There is no “calculating” by an effect simulator, let alone a calculation “based on” at least one simulation parameter. The specifics of these references are discussed in more detail below, but I believe it is noteworthy that the '258 Patent is fundamentally different than these prior art techniques because of the “calculating” limitation that appears in claim 1.

102. Further, even where a device includes the option to customize or modify a pre-recorded set of lighting values, a POSITA would have understood that parametrizing or customizing those pre-recorded values does not involve a “calculation.” Parameterizing a pre-recorded lighting scheme does not require calculating anything; it simply involves adjusting the pre-recorded parameters. For example, if a fire special effect is pre-recorded and the playback speed is increased, there is no “calculating” within the meaning of the ’258 Patent claims—the pre-recorded lighting effect is simply played slower or faster. The same holds true for a brightness adjustment, *i.e.*, pre-recorded time varying lighting values for the fire are replayed and the overall brightness may change, but there is no “calculating” of the time varying lighting values (nor a calculation “based on” the adjusted brightness).

103. As an analogy, compare a live jazz performance to a mp3 recording of a jazz song. When the listener plays the recording, the mp3 player is not calculating a time varying musical signal, it is simply recalling a pre-defined pattern of musical notes. Conversely, at the live jazz performance, the musician is actively choosing which notes to play next. In this analogy, the jazz musician takes the place of the “effect simulator,” the notes she plays are the time varying musical signal, and her choice of which notes to play next is her calculation thereof – the algorithm she uses to choose each note. On the other hand, the mp3 player is

a passive system that merely replays a pre-defined musical pattern. While the user may adjust parameters of that signal (*e.g.*, the volume, the playback speed, etc.), the musical signal is not “calculated,” it is simply recalled.

104. While the mp3 player and the jazz musician may both output a nearly identical song, the method at which each arrived at that output is entirely different. In particular, the mp3 player will consistently play the same exact song, but it will never give the user a “concert” experience. That realism is only achievable with a live musician actively choosing (in a sense, calculating) the next notes. The ’258 Patent recognizes that realism in lighting effects is not achievable by layering customized parameters over a pre-recorded pattern.

105. In my opinion, Mr. Wood takes an overly broad view with respect to what the “calculating” limitation encompasses. For example, I reviewed Mr. Wood’s deposition transcript, and he seems to believe that *any* analog circuit that receives a user input and outputs lighting values is performing a “calculation.” EX2004, 70:2-71:21, 95:8-100:1, 156:13-14, 158:4-159:3; EX2014, 369:13-17. Further, Mr. Wood seems to believe that *any* conversion from a manual input to a lighting output involves a “calculation.” EX2004, 110:3-112:4 (increasing the volume of a radio involves a calculation), 112:17-114:9 (a Super Strobe from the 1980s receiving a manual input of a flash rate and converting it to an output performs a calculation). I understood Mr. Wood to argue that receiving a manual

input (*e.g.*, of a brightness increase) and converting it to an LED signal using PWM requires a calculation. EX2004, 145:6-146:18, 149:7-150:19, 154:12-155:18; EX2014, 343:5-7, 427:16-21.

106. Finally, and perhaps most notably, I see that Mr. Wood takes the position that replaying pre-defined effect patterns includes calculating. EX2004, 200:22-201:22 (“Q: So is it your position that the replaying of a number of predefined effect patterns includes calculating? A: Absolutely. ... So, yeah, this absolutely requires calculation.”). I disagree that the claimed “calculating” of the ’258 Patent is as broad as Mr. Wood seems to understand it. Mr. Wood’s view would encompass every light that allowed, *e.g.*, a user input to increase brightness, every digital light that received a signal to change color, or every digital light that is merely capable of receiving a signal (*i.e.*, “listening” for a signal). EX2014, 337:9-11 (“Q: Is the light listening for new commands calculating? A: Absolutely.”). Further, Mr. Wood’s view would encompass the mere “replaying” of a ***pre-defined*** lighting pattern. EX2004, 200:22-201:22. That is simply not how a POSITA would have understood “calculating” in the context of the ’258 Patent as I have explained above.²

² Additionally, I have also reviewed institution decisions regarding IPR petitions for the ’258 Patent and family member U.S. Patent No. 10,197,257. *See* EX2005

X. CLAIMS 1-22 ARE VALID OVER SHOWLINE

A. Petitioner Failed To Demonstrate That Showline Was Publicly Available To A POSITA Prior To April 8, 2016

107. In my opinion, Petitioner has not shown that Showline was publicly available before the priority date of the '258 Patent. Specifically, there is no evidence that the Showline Manual was available to *persons of ordinary skill in the art*—the Petitioner at most established that customers could access the manual but has not offered evidence that any customers are POSITAs as defined by either myself or by Petitioner's expert, Mr. Wood.

108. I understand that in order to be considered a printed publication, a reference published online needs to have been accessible by a POSITA applying reasonable diligence. *See* Section III.C, *supra*. Here, Petitioner has only presented evidence that Showline customers received a Quick Start Guide—and not the actual Showline Manual—which contained a link to an electronic version of the Showline Manual. *See* EX1010, ¶6. However, Petitioner has not submitted any

(IPR2022-00261 (Paper 8)) and EX2006 (IPR2022-00262 (Paper 7)). I observe there that the Board found a prior art reference's disclosure of searching a library of pre-packaged effects (EX2006, 24) and modifying the pre-packaged effects (EX2005, 19) do not involve "calculating a time varying lighting value." I concur and this finding underscores the same flaw in Petitioner's arguments.

evidence that *customers* who purchased the Showline SL PAR 155 were POSITAs. Specifically, Petitioner argues that a POSITA “would have had a good working knowledge of electrical engineering” gained “through an undergraduate Bachelor’s degree in electrical engineering.” Petition, 7. However, Petitioner has not shown that Showline SL PAR 155 customers were electrical engineers with engineering Bachelor’s degrees. Mr. Palmer, whose declaration describes the SL PAR 155 Quick Start Guide and User Manual, states only that the first SL PAR 155 sales were “to dealers,” and that those dealers sold the product “to end user customers.” EX1010, ¶4. Mr. Palmer provides no details regarding the backgrounds or qualifications of the end users (who are the group to whom the Showline Manual was allegedly published). Additionally, Mr. Wood testified that end users of these lights are lighting operators, who are not necessarily POSITAs. EX2004, 50:22-52:22; EX2014, 377:2-4. Neither Mr. Palmer, nor Petitioner, submitted any evidence showing that the customers of the Showline SL PAR 155 meet the credentials of a POSITA as defined by either Petitioner or Patent Owner.

109. Further, Petitioner has not submitted evidence that the website containing the link to the Showline Manual was known to POSITAs, or that a POSITA would have been able to access the Showline Manual by applying reasonable diligence. Petitioner did not submit any evidence of anyone accessing the manual. At most, Petitioner only established that *customers* could access the

manual; Petitioner has not shown that any customer actually did so, let alone that ***POSITAs*** could (or did) access the manual.

110. Therefore, the evidence presented by Petitioner is insufficient to show that a POSITA could have, through an exercise of reasonable diligence, located the Showline Manual.

B. Showline Does Not Anticipate Independent Claim 1

1. Petitioner Does Not Demonstrate that Showline Discloses “a controller comprising...an effect simulator”

111. Claim 1 recites “a controller adapted to control the lighting device to produce a user customizable cinematic lighting special effect selected from a range of different user customizable cinematic lighting special effects.” EX1001, cl. 1. Claim 1 of the ’258 Patent further recites “the controller comprising: an input interface...” and “an effect simulator.” EX1001, cl. 1. I do not believe that Petitioner has made a threshold showing that a “controller” is disclosed in Showline.

112. Petitioner and the Wood Declaration seem to rely on the “LCD Display and Menu System” of Showline as satisfying this element. Petition, 12-15; EX1008, ¶¶52-56. Further, Mr. Wood admitted in his deposition that Showline does not explicitly disclose the LCD Display and Menu System includes a processor. *See* EX2014, 323:12-23.

113. I do not see any further explanation in Mr. Wood’s declaration or in the Petition explaining why an “LCD Display and Menu System” necessarily requires a controller or that a controller is inherently present. Further, Mr. Wood admitted that the Showline Manual does not provide any details about *how* the lighting device receives inputs and changes the outputs. *See* EX2014, 329:15-21.

114. Therefore, my understanding is that Petitioner has not met its burden to show that Showline anticipates this claim element.

2. Showline Does Not Disclose “an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter”

115. In my opinion, the Petition and the Wood Declaration fail to demonstrate that Showline anticipates the “effect simulator” limitation of independent claim 1 of the ’258 Patent because Showline only discloses stored presets or stored chases. EX1004, 14. While these stored lighting effects are modifiable by a user, I do not think that a POSITA would have understood that editing Showline’s stored pre-sets or stored chases involved “an effect simulator adapted to *calculate* a time varying lighting value based on at least one simulation parameter.” EX1001, cl. 1; *see* Section IX. Accordingly, claim 1 is distinguishable over Showline.

116. The Wood Declaration describes the ’258 Patent as disclosing an “effect simulator” as a component of a controller that “creates data 106

characterizing a lighting effect.” EX1008, ¶61. In so describing, Mr. Wood admits the difference between Showline’s disclosure of pre-set lighting effects and the “effect simulator” limitation of the ’258 Patent. Specifically, the effect simulator, in being “adapted to calculate a time varying lighting value,” creates data that is later output to generate a lighting effect. Showline, on the other hand, merely recalls and replays “[p]resets,” which are “stored values of the luminaire’s LED settings that can be recalled.” EX1004, 15. Showline does not disclose “creating” data, let alone *calculating* time varying lighting values.

117. Mr. Wood appears to make two arguments across paragraphs 61-63 of his declaration regarding how Showline satisfies this limitation. EX1008, ¶¶61-63; *see also* Petition, 18-20 (making the same arguments). First, Mr. Wood seems to argue Showline discloses the claimed “effect simulator” because the Showline Manual discloses a controller that recalls and replays these “[p]resets.” EX1008, ¶61; EX1004, 15. Second, Mr. Wood argues that because Showline’s controller allows the user to “adjust[] the customizable parameters for a preset” (or chase) this adjustment of pre-recorded lighting values anticipates the claim limitation because the setting of the pre-set (or chase) values involves calculating a time varying lighting value based on an input from a user. EX1008, ¶¶62-63. I disagree with these arguments, at least as I have already explained above. *See* Section IX.

118. Further, in my opinion, the ability to recall and replay pre-recorded lighting patterns does not disclose the effect simulator claimed in the '258 Patent because replaying pre-recorded lighting patterns does not *create* data as Mr. Wood himself has characterized the “calculating” of the '258 Patent. *See* EX1008, ¶61. The ability to modify or adjust the pre-recorded lighting patterns does not anticipate the effect simulator limitation for the same reason—*i.e.*, there is no calculation.

119. ***Recalling and replaying pre-recorded lighting patterns does not disclose “an effect simulator adapted to calculate a time varying lighting value.”*** Somewhat tellingly, Mr. Wood spends a minimal amount of time arguing that the effects disclosed by Showline alone (*i.e.* without user customization) are sufficient to anticipate the effect simulator element. Mr. Wood merely states that “[t]he Showline Manual discloses that the LCD Display and Menu System includes an ‘effect simulator,’ as the interactive LCD Display and Menu System adjusts and stores data in the form of ‘values of the luminaire’s LED settings’ for the presets and chases.” EX1008, ¶61 (citing EX1004, 16-17). While Mr. Wood explains that the “LED setting values are time varying data values that characterize the desired effect,” he fails to provide any analysis showing that the Showline device ***calculates*** those values. EX1008, ¶61. The “effect simulator” element of the '258 Patent requires more than just recalling and replaying “time varying data values;”

the “effect simulator” must be adapted to “calculate” those values. EX1001, cl. 1; EX1008, ¶61.

120. Showline describes two types of effects: “Presets,” which can be “Standard and User Defined” and “Effects,” also known as “Chases,” which can be “preloaded and user defined.” EX1004, 14. Showline defines “Presets,” “Effects,” and “Chases” using identical language, and Mr. Wood refers to “presets,” “effects,” and “chases” interchangeably. *See, e.g.*, EX1004, 15 (defining Presets); 16-17 (defining Chases and Effects); *see also* EX1008, ¶62.

121. Notably, Showline defines presets as “**stored values** of the luminaire’s LED settings that can be recalled via the menu system or DMX.” EX1004, 15. Showline defines effects and chases with the same phrase used to define presets: “**stored values** of the luminaire’s LED settings that can be recalled via the menu system or DMX.” EX1004, 16-17.

122. Each of these disclosed effects are pre-recorded lighting sequences capable of being recalled and replayed by the controller. *See* EX1004, 15, 19. While the effects can be either “preloaded” or “user defined,” nothing in Showline indicates an effect simulator that calculates time varying lighting values. EX1004, 14; *see also*, EX1001, cl. 1; Section IX, *supra*. Nor does Mr. Wood cite any evidence from Showline that the pre-recorded effects are “calculated.” Indeed, Mr. Wood characterized “presets” as “a single light output” that is “static,” (EX2014,

330:12-21)³ and characterized a “chase” as a sequence of presets. EX2014, 335:6-15 (“a chase is made up of a number of presets... a chase will loop, in order words I go from Preset 1 to Preset 2.”). Mr. Wood’s argument asserting that the effects described in Showline are calculated by an effect simulator is conclusory and unsupported by the reference. Further, he admitted that presets are merely static color outputs, and chases are a string of static colors in a sequence, each step, and the transitions between the steps. EX2014, 330:12-21, 335:6-15; EX1004, 15-17. He even admitted that the Showline Manual does not disclose *how* the lighting device receives the preset input and changes the output because “[t]he user doesn’t need to know that.” EX2014, 329:15-21, 332:2-8, 338:21-339:20. A POSITA would have understood that replaying of stored presets or chases in the Showline

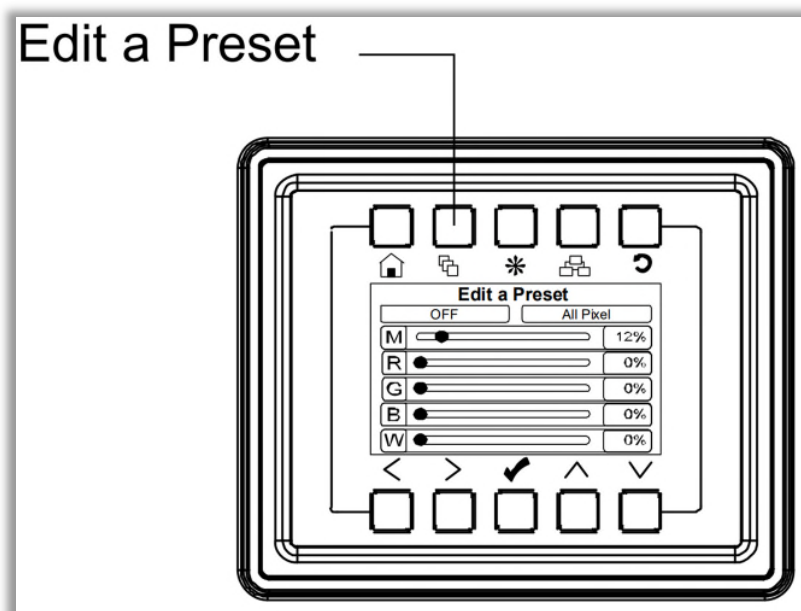
³ While Mr. Wood qualified this description by stating that presets “may include a strobe” (EX2014, 330:21), this statement is directly contrary to the teachings of the reference. The Showline Manual puts “Presets” and “Strobe/Timing” as separate categories in the menu. EX1004, 14. Further, while a strobe can be applied to a preset (or a chase), creating or editing a preset only allows editing the static color of the preset; no strobe or timing options are available. *See* EX1004, 15 (“Edit a Preset” menu, shown larger in EX1008, ¶64.)

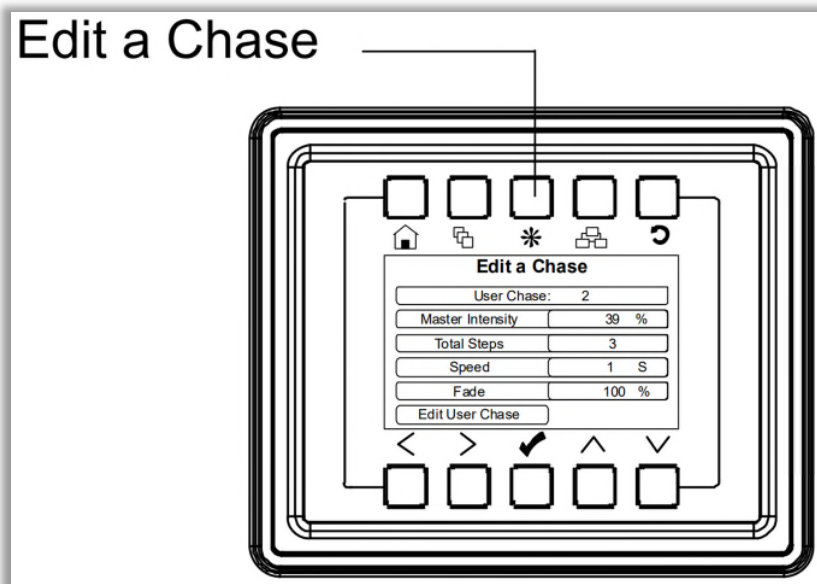
Manual does not involve “calculating” a time varying lighting value based on at least one simulation parameter.

123. *Adjusting parameters of a pre-recorded lighting pattern does not disclose “an effect simulator adapted to calculate a time varying lighting value.”*

Adjusting parameters of a pre-recorded pattern does not constitute “calculating” as claimed and described in the ’258 Patent. Specifically, adjusting parameters like intensity, timing, and fade of a pre-recorded pattern does not calculate time varying lighting values.

124. Showline discloses the ability to edit effects by adjusting various parameters like color, intensity, speed, and fade. EX1004, 15-16. The figures below illustrate the menus available for adjusting these parameters:





EX1004, 15, 17.

125. The first of the above images shows the option to set the color of a preset, (or of a preset defining a single step of an effect) by setting specific values for each of the red, green, blue, and white color channels (the Showline uses RGBW LEDs), as well as the master intensity. EX1004, 15. The second image shows the ability to adjust the master intensity, speed, and fade values (“Total Steps” is not an editable field). EX1004, 16. Table 3 describes these parameters:

Table 3: Effects Parameters	
Parameter	Description
User Chase / Built-in Chase	Select from the 18 different chases.
Master Intensity	Adjust the master intensity for ALL chases.
Total Steps	Displays the total steps used by the chase. This field is not editable.
Speed	The total time each step of the chase will be recalled.
Fade	The percentage of the time assigned by the speed that is crossfaded between steps.

EX1004, 16. Notably, “Master Intensity” and “Speed” require the user to input a hardcoded value for those parameters (*i.e.*, a playback value to be applied to each step of the effect, without calculation.). Additionally, “Fade” simply adjusts the transition between steps according to pre-defined dimming curves. EX1004, 22.

126. As a preliminary matter, Mr. Wood’s discussion of why adjusting parameters involves an effect simulator configured to calculate is again formed around conclusory assertions. For example, Mr. Wood claims that based on the user selections, the LCD Display and Menu System “calculates, sets, and stores” new data values. EX1008, ¶62. However, this sentence is unsupported in the reference, and the Wood Declaration does not go on to explain why or how the LCD Display and Menu System “calculates, sets, and stores” the new data values. *Id.* The next sentence appears to contain the same general assertion (again using the “Display and Menu System calculates, sets, and stores” language), but cites only to Mr. Wood’s own declaration regarding elements 1(b) and 1(c) and to page 16-17 of Showline. EX1008, ¶62.

127. Paragraphs 52-60 of the Wood Declaration (EX1008) do not contain any references to any “calculation” performed by the Showline device nor do they explain in any detail how the “Display and Menu System calculates, sets, and stores” new data values. Similarly, pages 16-17 of Showline lack any disclosure that indicates that a calculation is occurring. *See* EX1004, 16-17. Instead, these

pages only show that the Showline device allows users to adjust parameters. *See* EX1008, ¶¶52-60; EX1004, 16-17. There is no evidence that adjusting parameters using an LCD display constitutes an effect simulator *adapted to calculate* time varying lighting values. *See* Section IX (explaining how an effect simulator that *calculates* time varying lighting values is distinct from playing pre-recorded values).

128. Further, the specification of the '258 Patent draws a distinction between the effect simulator that calculates time varying lighting values and simply replaying pre-recorded effects after adjusting for user inputs when it explains:

Generating the light output with the simulation provides a greater level of user adjustment and control than that produced by simply sampling the intensity of a real flame and **replaying it at *different speeds***.

EX1001, 10:17-20.

129. A POSITA would have understood that a recording created by “sampling the intensity of a real flame” is a pre-recorded pattern, and replaying it at “different speeds” involves adjusting the parameters of that pre-recorded pattern. While adjusting the playback speed modifies the effect, it does not involve a “calculation.”

130. Returning briefly to the jazz analogy, adjusting the volume, or playback speed on an mp3 player, will change the output but does not involve a “calculation.” *See* Section IX. No amount of adjusting playback parameters of the lighting effects in Showline will be the same as calculating new musical notes (akin to calculating time varying lighting values).

131. Moreover, in my opinion, Petitioner has presented nothing but conclusory arguments regarding the “calculate” limitation. Accordingly, my understanding is that Petitioner has not met its burden of showing that Showline anticipates the “effect simulator” limitation of independent claim 1.

C. Showline Does Not Anticipate Dependent Claim 17

132. As discussed above, in my opinion, Showline does not anticipate independent claim 1. Claim 17 depends from claim 1, and therefore, Showline does not anticipate claim 17 for the same reasons as set forth above. Further, in my opinion, Showline does not disclose a lighting system “wherein the controller is separable from the lighting device” as recited in claim 17.

133. In addressing this limitation, Mr. Wood relies entirely on Showline’s ability to be controlled via DMX, which he characterizes as “a separable DMX512 control source.” EX1008, ¶102.

134. Mr. Wood (and Petitioner) did not rely on the DMX512 control source to meet claim 1, which defines that the controller and lighting device are

“integrated in a combined unit.” EX1001, cl. 1. Therefore, whether or not the DMX control source is “separable,” the DMX control source cannot meet claim 17, which requires a controller that is *both*: (i) “integrated in a combined unit” with the lighting device, *and* (ii) “separable” from the lighting device.

135. Mr. Wood (and Petitioner) relied solely on the local LCD Display and Menu System to satisfy the “integrated in a combined unit” claim limitation of claim 1. *See* Petition, 22-23; EX1008, ¶70. I do not see any argument for claim 17 that the LCD Display and Menu System is “separable,” and so I believe that claim 17 is clearly distinguishable over Showline.

136. Further, the Wood Declaration does not provide any evidence that a POSITA would understand a DMX control source to be “separable.” Indeed, Mr. Wood’s testimony consistently referred to DMX signals as being created and sent from a “control desk.” EX2014, 401:1-8 (“Q: And can you just explain the mechanics of how this would work, if somebody was at the DMX? What would they actually do to create the fire effect? A: Okay. They might be at a control desk. It’s very common for these desks to have effects generated in them of this kind.”); *see also id.*, 409:18-410:1, 418:21-419:4.

137. Mr. Wood further relies on a “DMX ‘cable’” to disclose this limitation. EX1008, ¶103. He argues that the cable connecting the DMX controller to the lighting device “creates a combined, connected unit of the SL

PAR” and can “also be disconnected from the SL PAR unit.” *Id.* This embodiment, however, falls short of disclosing a separable controller because a connection via a cable does not constitute “integrated in a combined unit” as discussed in Section XI.A.2, below.

138. Accordingly, Petitioner has not met its burden of showing that Showline discloses a lighting system “wherein the controller is separable from the lighting device.” EX1001, cl. 17.

D. Showline Does Not Anticipate The Other Dependent Claims

139. Claims 2-6, 8-14, 16, and 18-22 ultimately depend from independent claim 1 as discussed above. I believe that these claims are distinguishable over Showline at least for the reasons discussed above regarding claim 1. *See* Section X.B *supra*. Claims 2-6, 8-14, 16, and 18-22 are thus not anticipated by Showline at least due to their dependence from claim 1.

E. Petitioner Did Not Articulate Any Obviousness Position Beyond Anticipation For Claims 1-6, 8-14, and 16-22

140. While the Ground based on Showline for claims 1-6, 8-14, and 16-22 as described in the Petition cited 35 U.S.C. §§ 102/103, I do not believe that the Petition, nor the Wood Declaration, sets forth any analysis beyond anticipation. Petition, 3-4. While I am not an attorney, my understanding is that obviousness requires analyzing certain factors, which include an assessment of the content of the prior art reference and an identification of the differences between the prior art

reference and the claims. *See* Section III.B *supra*. I further understand that in order to establish obviousness, there must be an articulated reason for modifying the underlying reference to arrive at the claimed invention.

141. I have reviewed the analysis set forth in the Petition and in the Wood Declaration regarding claims 1-6, 8-14, and 16-22. I do not see that there is an analysis presented regarding the scope and content of Showline or identification of any limitation in claims 1-6, 8-14, and 16-22 missing from Showline that would purportedly have been obvious to a POSITA based on Showline. Further, I do not see any rationale provided in the Petition or the Wood Declaration articulating a reason to modify Showline in such a manner to arrive at the claimed invention, or any of the other factors for an obviousness analysis I summarize above.

142. Therefore, it is my opinion that the Petition, and the Wood Declaration, do not demonstrate that claims 1-6, 8-14, and 16-22 would have been obvious based on Showline for the same reasons as explained above regarding anticipation and because no further obviousness analysis was presented.

143. For completeness, and in order to respond to the conclusory obviousness position alleged in the Petition, I have considered the matter and it is further my opinion that a POSITA would not have found claim 1 obvious in view of Showline. For example, it would not have been obvious to a POSITA to modify Showline to include the “an effect simulator adapted to calculate a time varying

lighting value.” EX1001, cl. 1. Specifically, Showline only discloses a relatively simple system for storing pre-recorded effects and recalling and replaying those effects. EX1004, 15-17. The “effect simulator adapted to calculate a time varying lighting value” is, in comparison, a unique functionality that distinguishes over Showline’s lighting system. Petitioner has not identified any reason to modify Showline to include the effect simulator, nor do I believe a POSITA would have been so motivated. Further, Petitioner, and Mr. Wood, did not offer any opinion that Showline could have been modified to include an “an effect simulator adapted to calculate a time varying lighting value” with a reasonable expectation of success.

F. Claims 7 And 15 Are Not Obvious

144. I have reviewed the Choong (EX1005) and Reinoso (EX1006) references, which are asserted in combination with Showline regarding claims 7 and 15, respectively. I do not see any teaching in these references of an “effect simulator adapted to calculate a time varying lighting value,” nor do I understand that Petitioner nor Mr. Wood make such an assertion. While I do not necessarily agree that a POSITA would have found it obvious to combine Choong or Reinoso with Showline, I nonetheless understand that claims 7 and 15 should be distinguishable over such an alleged combination at least due to their dependence

from claim 1. Accordingly, in my opinion, claims 7 and 15 are valid at least because claim 1 is valid, as I have explained above.

XI. CLAIMS 1-22 ARE VALID OVER POHLERT

A. Pohlert Does Not Anticipate Independent Claim 1

145. There are two primary reasons I believe that Pohlert does not anticipate independent claim 1 of the '258 Patent.

146. First, Pohlert does not “calculate” a time varying lighting value. Instead, Pohlert describes pre-defined light patterns illuminated in pre-defined or pseudo-random “sequences.” EX1003, ¶¶[0063], [0067]. Executing pre-defined light patterns (even in a pseudo-random sequence) does not involve *calculating* a lighting value, and particularly does not involve calculating a “time varying” lighting value. The reliance on manual inputs being converted to power control signals or the generation of special effects such as strobing and pattern generation do not show calculating a time varying lighting value. My explanations regarding the fundamental difference in the “calculating” limitations of the '258 Patent and Showline should be understood as applying here as well. *See* Section IX.

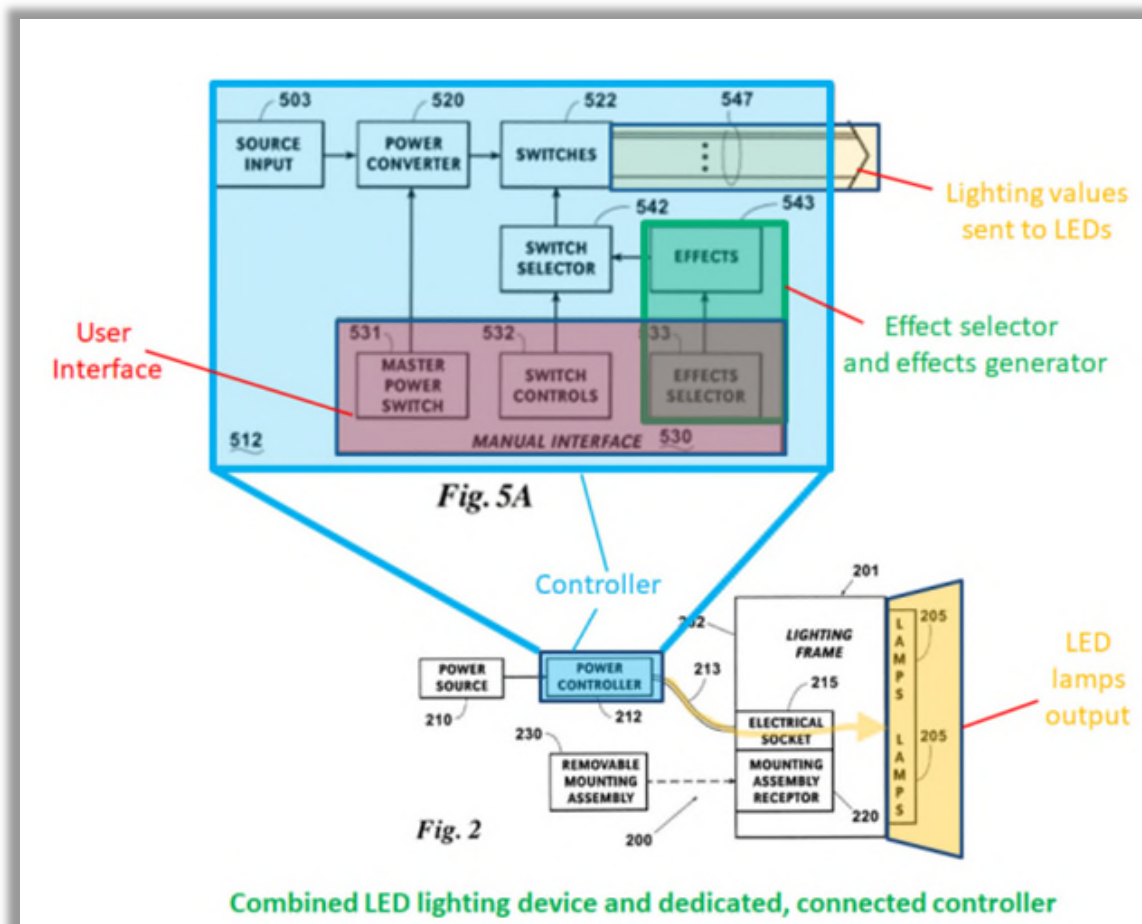
147. Second, Pohlert does not disclose a lighting system “wherein said lighting device and said controller are integrated in a combined unit.” The Petition and the Wood Declaration improperly rely on a misleading annotation to one of the figures of Pohlert to argue that the controller of Pohlert is integrated with the

lighting device. In fact, Pohlert does not disclose an integrated controller and thus this element is not met.

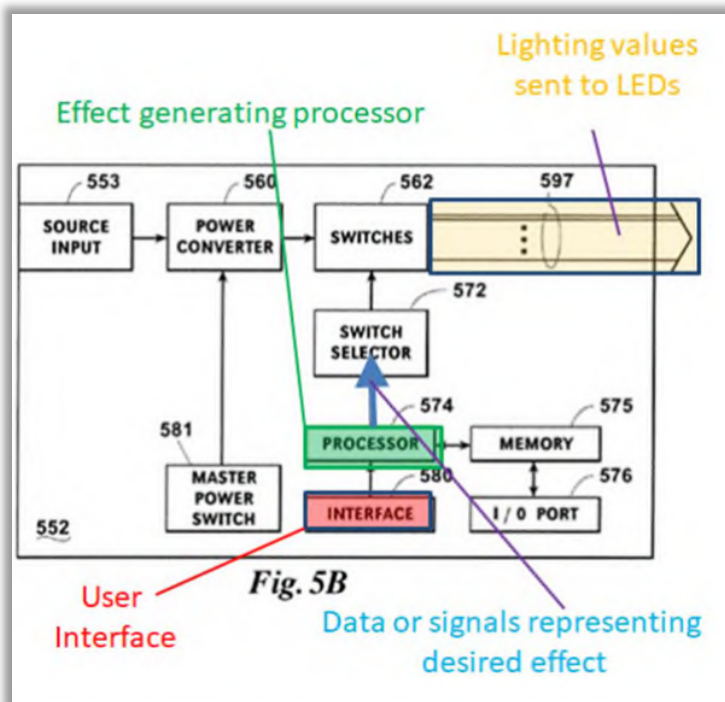
1. Pohlert Does Not Anticipate “an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter”

148. In my opinion, Pohlert does not disclose “an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter” as recited in claim 1. As such, it is my opinion that independent claim 1 is distinguishable over Pohlert.

149. The Petition and Wood Declaration seem to equate two separate components from two embodiments in Pohlert to the claimed “effect simulator”:
(i) the effects selector 533 and effects generator 543 (FIG. 5A) and (ii) the processor 574 (FIG. 5B). Petition, 63; EX1008, ¶¶146, 147. Mr. Wood provides marked-up versions of FIGS. 5A and 5B that illustrate these interpretations:



EX1008, ¶155 (regarding a different claim element, but showing the annotated “effect selector and effects generator”).



EX1008, ¶151.

150. The effects generator 543 (FIG. 5A) and the processor 574 (FIG. 5B) then appear to be relied on in the same way, in that the Petition (and Wood Declaration) focuses on either of these components generating certain “lighting effects” as allegedly meeting this limitation. Petition, 63; EX1008, ¶¶146-153. In particular, it appears that the Petition relies on the generation of “power control signals”, the “strobing”, and the “light effect patterns” collectively or individually to anticipate this claim limitation. *See* Petition, 63-64.

151. Respectfully, I believe that none of these embodiments involve an effect simulator adapted to calculate anything, let alone “a time varying lighting

value.” Therefore, I disagree that Pohlert discloses the “effect simulator adapted to calculate a time varying lighting value” limitation.

152. ***Power Control Signals.*** The Petition and the Wood Declaration begin their discussion of this element with some references to Pohlert’s disclosure of an effects generator 543 or processor 574 that output “power control signals” to LEDs to produce particular special effects. Petition, 63; EX1008, ¶147.

153. Indeed, Pohlert discloses an effects generator 543 (FIG. 5A) that provides the ability to create various lighting effects such as “dimming, strobing, pulsation, or pattern generation.” EX1003, ¶[0061]. Pohlert’s processor 574 in Figure 5B executes “programming instructions [that] may also provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation.” EX1003, ¶[0067].

154. However, the output of power control signals to “generate the desired light output patterns” (EX1008, ¶147) does not mean generating the power control signals themselves involves *calculating* a time varying lighting value as recited in the independent claim. Therefore, in my opinion, the Petitioner’s general allegation that the effects generator 543 or the processor 574 output power control signals to provide a time varying lighting effect does not show that this limitation is met. The critical issue here is whether any of these lighting effects are created by “an effect simulator adapted to calculate a time varying lighting value” (as

Petitioner contends) or whether the effects generator 543 generates the effects without “calculating” time varying lighting values. In my opinion, a POSITA would have known Pohlert discloses the latter—the effects generator 543 is *not* calculating a time varying lighting value.

155. For example, Pohlert explains that dimming may be accomplished using a manual control knob or a multi-position switch on the effects selector 533. EX1003, ¶[0061]. It is my opinion that a POSITA would have readily understood no “calculation” of a time varying signal is required to transfer user input via a manual control knob to effectuate the desired dimming. Converting a manual input to an output power control signal for an LED does not involve “calculat[ing] a time varying lighting value.” Indeed, Pohlert itself teaches the use of standard electrical components to regulate the LED output. *See* EX1003, ¶¶[0068]-[0071], [0119]-[0125], FIGS. 6, 19A, 19B.

156. The '258 Patent itself makes clear that the “calculat[ing]” of the time varying signal based on the simulation parameter is distinct from simply converting a manual input signal to a power control signal for an LED. *See* Section IX. Further, the '258 Patent explicitly discloses a “converter” as a separate component than the effect simulator performing the calculation. *See* EX1001, 8:41-53. It even claims the “converter” as a separate component of the lighting

system than the controller (which includes the effect simulator). *See* EX1001, cl. 19.

157. A POSITA would have known that it is this type of component—*i.e.*, a converter—that would have been used in a conventional system to convert a manual input (*e.g.*, a brightness increase or decrease) to a pulse-width-modulation (PWM) output in the form that an LED would understand. *See id.* There is no “calculation” in this type of conversion, and the ’258 Patent thus makes clear from its disclosure at lines 41 to 53 of column eight that the “effect simulator” has a distinct functionality from mere signal conversion. EX1001, 8:41-53.

158. ***Strobing.*** The Petition and Wood Declaration also seem to allege that the strobing special effect in Pohlert anticipates the “calculating” claim limitation. *See* Petition, 63-64; EX1008, ¶148. The Petition says Pohlert’s “controller generat[es] an oscillating signal (which is a time varying signal)” and thus appears to argue this oscillation signal generation meets the “effect simulator adapted to calculate a time varying lighting value” limitation. *See* Petition, 63-64; EX1008, ¶148. To the extent Petitioner asserts Pohlert’s strobing anticipates this limitation, I disagree.

159. Pohlert explains that strobing may be accomplished “by generating an oscillating signal and applying it as a control signal either upstream or downstream from the switch selector 542.” EX1003, ¶[0062]. It does not provide any detail as

to how the oscillation signal is “generated.” It does explain the frequency of oscillation may be selectable via a manual knob as part of the effects selector 533. EX1003, ¶[0062].

160. A POSITA would have known that Pohlert’s effects generator 543 would use conventional electronic components to generate an oscillating signal for the strobe light effect or a processor executing a predesignated pattern. *See* EX1003, ¶[0062] (explaining generating an oscillating signal), ¶[0067] (describing executing computer instructions “in a conventional manner”); *see also id.*, ¶¶[0068]-[0071], [0119]-[0125], FIGS. 6, 19A, 19B (collectively describing use of conventional electrical circuits to regulate LED output).

161. While there are lots of types and forms of sinusoidal signal generators (sometimes called a signal generator, an oscillator, a waveform generator, etc.), the electrical components used to create an oscillating signal are very well-known and have been around for many years (and thus, Pohlert likely did not include more details in ¶[0062] because someone in the lighting industry would have understood how the oscillating signal is generated). These signal generators use common electrical parts such as amplifiers, capacitors, resistors, and transistors in an integrated circuit to produce an oscillating (*e.g.*, sine wave type) output signal. Pohlert discloses these types of integrated circuits to control LEDs. EX1003, ¶¶[0068]-[0071], [0119]-[0125], FIGS. 6, 19A, 19B. The integrated circuit simply

receives a voltage and generates an oscillating signal using the integrated circuit – there is no “calculating” relied upon to generate the signal. Further, to the extent that a processor generates the oscillating signal, Pohlert is quite clear that the processor is merely executing “a predesignated pattern dictated by programming the instructions.” EX1003, ¶[0067]. There is no calculation.

162. A POSITA would have further understood that the manual knob providing a frequency adjustment for the oscillating signal simply involves adjusting the voltage introduced to the integrated circuit which changes the frequency of the output or the direct adjustment of Pohlert’s predesignated pattern dictated by programming instructions. Again, there is no “calculation” performed. It is just a standard electrical circuit at work to produce an oscillating signal or a change in the input frequency to the pre-coded programming instructions.

163. Further, I have reviewed paragraph 148 of the Wood Declaration where it discusses the oscillating signal being a time varying signal. Even if everything stated in paragraph 148 were accurate, I do not see how anything in this paragraph addresses *calculating* a time varying lighting value. Outputting an oscillating signal is not the same as calculating a time varying lighting value.

164. ***Pattern generation.*** The Petition and accompanying Wood Declaration also seem to rely on Pohlert’s “pattern generation” special effect to

satisfy the “calculating” limitation. *See* Petition, 64; EX1008, ¶149. In particular, the Wood Declaration provides:

Pohlert discloses generating light effect patterns where light segments are strobed, flashed, or dimmed in sequences, requiring the controller to calculate signals that are time varying, as some lights are on and some off at different times to generate the patterns. (Pohlert, [0063], [0067].)

EX1008, ¶149; *see also* Petition, 64 (setting forth the same argument).

165. I disagree that Pohlert’s lighting sequences, including the pseudo-random sequences, “requir[e] the controller to calculate signals that are time varying.” Rather, Pohlert in these paragraphs is describing executing *pre-defined* lighting effects in particular sequences. EX1003, ¶¶[0063], [0067]. Pohlert explains that pattern generation is done by “e.g., manual selection from a number of predefined patterns or else through an interface allowing different pattern sequencing.” EX1003, ¶[0063]. Patterns may include strobing or flashing different groups of light segments 325, 330, 335, 340, 345, 350, 355, and 360 in a pre-defined sequence or a pseudo-random sequence. EX1003, ¶[0063].

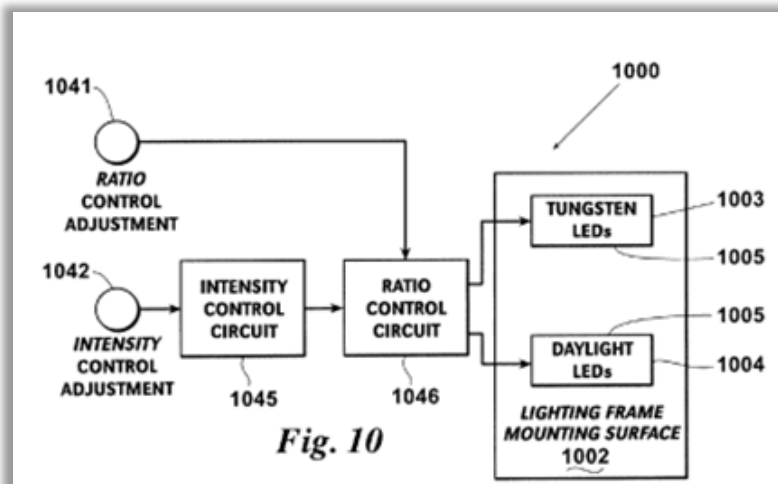
166. But, in my opinion, a POSITA would know executing strobing or flashing in a pseudo-random *sequence* is not the same as “calculating...a time varying lighting value.” The sequence that lighting values are executed does not affect the *lighting value* itself.

167. Paragraph [0067] of Pohlert makes this distinction particularly clear, as it explains that “the processor 574 reads instructions from the memory 575 and executes them in a conventional manner.” EX1003, ¶[0067]. FIG. 5B also clearly shows the arrangement, with the processor 574 connected to the memory 575 via an I/O port. *See id.*, FIG. 5B. A POSITA would have readily interpreted this figure, in light of paragraph [0067], as a clear indication that the processor is receiving information from the memory and is not “calculating” a time varying value. The processor 574 (which Petitioner views as interchangeable for this element with the effects generator 543) is simply executing pre-programmed software instructions to directly control the switches. EX1003, ¶[0067] (“The programming instructions may also provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation. ... The instructions will generally cause the processor 574 to control the switch selector by, *e.g.*, setting various digital values in registers whose outputs control the switches 562. ... To accomplish dimming, the processor 574 may be ***programmed [to] select binary-encoded values*** to load into registers of the switch selector 572. ... To accomplish strobing, the processor 574 may be programmed to turn the switches 562 on and off according to a ***predesignated pattern*** dictated by the programming instructions.”).

168. A processor executing pre-programmed instructions in this manner does not require “calculating...a time varying lighting value.” Pohlert does not disclose anything is calculated. *See e.g.*, EX1003, ¶[0067]. Further, I do not see any explanation in the Petition or Wood Declaration as to how Pohlert’s pattern generation disclosure anticipates “an effect simulator adapted to calculate a time varying lighting value” as recited in claim 1.

169. Finally, I observe that there is no description anywhere in Pohlert of how the pseudo-random sequence is generated, and so it cannot reasonably be “based on at least one simulation parameter” as required by the independent claims of the ’258 Patent. A POSITA would have understood Pohlert as disclosing a pre-defined pseudo-random sequence and not a calculated pseudo-random sequence “based on at least one simulation parameter.”

170. ***Intensity and Ratio Control.*** Lastly, the Petition and Wood Declaration refer to a different embodiment that includes an intensity control adjustment 1042 and ratio control adjustment 1041. Petition, 64-65; EX1008, ¶150 (citing to EX1003, ¶¶[0088]-[0092]). This embodiment is shown in FIG. 10:



171. Pohlert explains “FIG. 10 is a block diagram of one embodiment of a lighting effects system 1000 having at least two different lamp colors.” EX1003, ¶[0088]. Pohlert further describes that “lighting effects system 1000 comprises an intensity control adjustment 1042, an intensity control circuit 1045, a ratio control adjustment 1041, and a ratio control circuit 1046.” EX1003, ¶[0088]. The ratio control adjustment 1041 and intensity control adjustment 1042 are a *manual input means* such as a manual control knob. EX1003, ¶[0088], [0090].

172. As a threshold matter, I understand that it is improper to mix and match different embodiments from the same patent to provide an anticipation analysis. That is what Petitioner has done here. As acknowledged by Mr. Wood in his deposition, FIG. 10 is a distinct embodiment from FIGS. 3A-3B and 5A-5B. EX2004, 227:13-230:2, 221:20-224:1, 235:11-236:10 (agreeing that the embodiments of FIGS. 5A-5B and FIG. 10 are “*two separate embodiments* of

different things. ***But they could be combined*** in a single unit.” For other elements of claim 1 (at least elements 1p, 1b, 1c, 1e, 1f, and 1g) the Petition and Mr. Wood rely entirely on embodiments distinct from FIG. 10. Petition, 55-56, 58-62, 65-69; EX1008, ¶¶133, 135-145, 154-159.

173. Further, there is no discussion in the Petition as to how the ratio control adjustment 1041 and the intensity control adjustment 1042 are part of the embodiments in FIGS. 3A-3B and 5A-5B, nor is there any explanation of why it would have been obvious to modify the embodiments relied on for other elements to include aspects of the embodiment of FIG. 10, which is unique in that it particularly has two differently colored sets of LEDs and includes different circuitry from the other embodiments to control these two differently colored LED sets.

174. Further, this embodiment still does not teach “an effect simulator adapted to calculate a time varying lighting value” as recited in claim 1. Using a manual control knob or other manual input to “select” the intensity of the two differently colored LEDs (the “tungsten LEDs” and the “daylight LEDs”) does not involve *calculating* a time varying lighting value. This involves a direct manual input to produce a particular illumination level or relative intensity of the respective LEDs. *See e.g.*, EX1003, ¶[0089] (“setting the intensity control adjustment 1042 *selects* the illumination level for the lamp elements 1005, while

setting the ratio control adjustment 1041 *selects* the relative intensities between, in this example, the daylight LEDs 1004 and the tungsten LEDs 1003”).

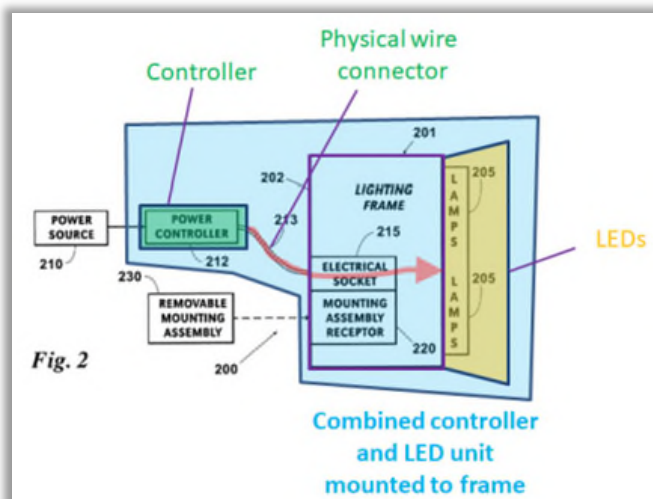
175. Setting this improper combination of embodiments aside, the FIG. 10 embodiment still does not teach “an effect simulator adapted to calculate a time varying lighting value” as recited in claim 1. Using a manual control knob or other manual input to “select” the intensity of the two differently colored LEDs (the “tungsten LEDs” and the “daylight LEDs”) does not involve calculating a time varying lighting value. This involves a direct manual input to produce a particular illumination level or relative intensity of the respective LEDs. *See e.g.*, EX1003, ¶[0089] (“setting the intensity control adjustment 1042 selects the illumination level for the lamp elements 1005, while setting the ratio control adjustment 1041 selects the relative intensities between, in this example, the daylight LEDs 1004 and the tungsten LEDs 1003”).

176. Controlling a light output with a manual knob does not require a calculation. In my opinion, a POSITA would have certainly understood that this is true throughout the various embodiments of Pohlert, regardless of the improper mixing and matching introduced by Petitioner.

2. Pohlert Does Not Anticipate a Lighting System “wherein said lighting device and said controller are integrated in a combined unit”

177. In addressing this element, the Wood Declaration first alleges that Pohlert’s power controller and LED lamps are physically connected “making them one combined unit.” EX1008, ¶156 (citing EX1003, ¶¶[0020], [0050]-[0051]). None of these Pohlert paragraphs actually state the controller and the LED lamps form a combined unit. Rather, these paragraphs discuss generally synchronizing the lighting device with a video camera (¶[0020]), providing a power support and control circuitry for the lights (¶[0050] – but *not* that they are integrated), and that the lights may be mounted on a frame with an opening for the camera (¶[0051]). None of these passages anticipate the lighting device and controller being integrated in a combined unit.

178. The Wood Declaration then argues that Pohlert’s power controller “can be **physically connected by a cable** to the lighting elements on the lighting frame, making them one combined unit” and provides a marked up Figure 2 from Pohlert:



EX1008, ¶156.

179. First, I note that the blue border, shading, and red arrow in the annotated figure from the Petition and Wood Declaration do not actually appear in Pohlert. EX1001, FIG. 2; Petition, 67-68; EX1008, ¶156; EX2014, 347:5-7 (admitting the same).

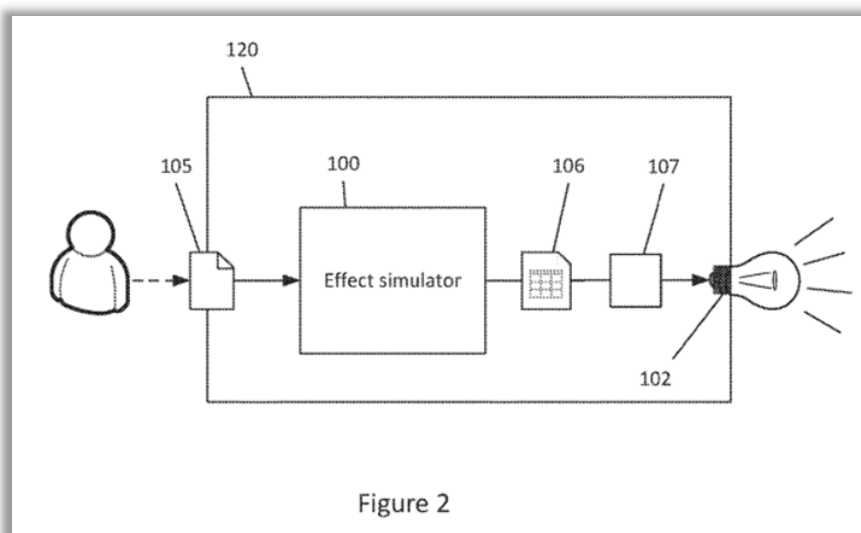
180. Second, I disagree that a POSITA, having read the '258 Patent, would believe that a wired cable connection satisfies the claim 1 language of “integrated in a combined unit.” Instead, the '258 Patent includes the following passage:

[I]t should be appreciated that the effect simulator 100 or the computing device 130 *may be separate* from any light 102, and connectable to lights 102 by either a *wired* or wireless connection.

EX1001, 11:44-47. Notably, Mr. Wood agreed in his deposition that “the mere existence of the cable” does not indicate whether a controller is integrated.

EX2014, 322:1-4.

181. In contrast, the '258 Patent explains, in the context of the embodiment of Figure 2, that the “microcontroller or other computing unit is integrated in the lamp device 120 for performing calculations.” EX1001, 6:1-3.

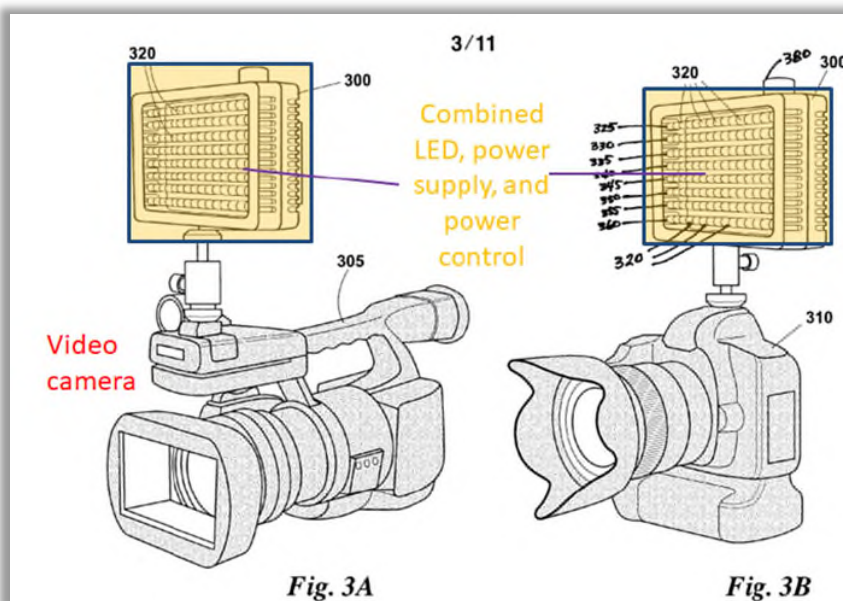


EX1001, FIG. 2 (showing the integrated effect simulator 100 and light 102 within the single studio lamp device 120); *see also id.*, 5:61-63 (describing the single integrated studio lamp device 120).

182. Therefore, in my opinion, the '258 Patent draws a clear distinction between the controller and lighting device being “integrated in a combined unit” and the controller and lighting device being “separate,” which includes *a wired connection*. Accordingly, I do not agree with Petitioner’s positions that a wired

connection satisfies claim 1 because they are not reflective of how a POSITA would have understood this claim language.

183. The Wood Declaration then goes on to say that Pohlert's power source 210 "may be either 'a standard electrical outlet' or 'a battery having sufficient current to drive the LEDs,'" and argues that disclosure of a self-contained battery unit satisfies claim 1. *See* EX1008, ¶157. But as can be readily seen even in Mr. Wood's annotated version of Figure 2 above, the power source 210 (*e.g.*, a battery) is a distinct component from the power controller 212. EX1008, ¶156, FIG. 2 (annotated); EX2014, 347:12-16. Even if a *battery* may be self-contained with the lighting device, that does not disclose that the controller is self-contained. The annotations provided in the Wood Declaration regarding FIGS. 3A-3B are misleading in this same respect:



EX1008, ¶157.

184. The Wood Declaration does not point to any disclosure in Pohlert that actually teaches the *controller* is part of what is shown in FIGS. 3A-3B. The reference to a “kit” suffers from the same deficiency as the “kit” mentioned in Pohlert does not include a controller. *See* EX1008, ¶157 (citing EX1003, ¶¶[0024], [0050]). The Wood Declaration’s final citations for this claim involve a general discussion of the transportability of the “lighting and effects generator” and a mention of Pohlert’s Abstract. *See* EX1008, ¶¶158-159 (citing EX1003, ¶[0094], Abstract). The description in Pohlert at paragraph [0094] does not tie the effects generator to being formed in a single integrated unit *with a lighting device*. EX1003, ¶[0094]. Instead, this passage just says the lighting and effects generator is capable of being battery powered and that an LED studio can be set up at a desired location. *See id.* Finally, Pohlert’s Abstract does not disclose an integrated unit with a controller and lighting device because the full language of the portion relied upon (which is cut off in the Wood Declaration in paragraph 159) is: “The lighting apparatus may include an effects generator *in communication therewith...*,” thus indicating the effects generator is “in communication” with the lighting apparatus, but not necessarily integrated in a combined unit. *See e.g.*, EX1003, Abstract, ¶[0107] (discussing wired or wireless communication); FIGS. 2

and 5A-5B (showing embodiments of non-integrated effects generators that are in communication with a lighting device).

185. Accordingly, Petitioner has not met its burden of showing that Pohlert discloses a lighting system “wherein said lighting device and said controller are integrated in a combined unit” as recited in claim 1.

B. Pohlert Does Not Anticipate Dependent Claim 6

186. Claim 6 indirectly depends from claim 1, and so it is distinguishable over Pohlert at least because claim 1 distinguishes over Pohlert. Further, Pohlert does not anticipate claim 6 for additional reasons.

187. Claim 6 recites “the controller is adapted to control the colour or colour temperature of said LEDs in dependence on a user input received via the input interface.”

188. The Petition and the Wood Declaration exclusively rely on Pohlert’s disclosure in FIG. 10 as satisfying this claim element. *See* Petition, 72; EX1008, ¶¶163, 164 (citing to EX1003, ¶¶[0088]-[0092]).

189. I understand that it is improper to mix and match different embodiments from the same patent to provide an anticipation analysis. That is what Petitioner has done here. As acknowledged by Mr. Wood in his deposition, FIG. 10 is a distinct embodiment from FIGS. 3A-3B and 5A-5B. EX2004, 227:13-230:2, 221:20-224:1, 235:11-236:10 (agreeing that the embodiments of FIGS. 5A-

5B and FIG. 10 are “*two separate embodiments* of different things. *But they could be combined* in a single unit.”). For other elements of claim 1 (at least elements 1p, 1b, 1c, 1e, 1f, and 1g) the Petition and Mr. Wood rely entirely on distinct embodiments from FIG. 10. Petition, 55-56, 58-62, 65-69; EX1008, ¶¶133, 135-145, 154-159.

190. Further, there is no discussion in the Petition as to how the ratio control adjustment 1041 and the intensity control adjustment 1042 are part of the embodiments in FIGS. 3A-3B and 5A-5B, nor is there any explanation of why it would have been obvious to modify the embodiments relied on for other elements to include aspects of the embodiment of FIG. 10, which is unique in that it particularly has two differently colored sets of LEDs and includes different circuitry from the other embodiments to control these two differently colored LED sets.

191. Therefore, my understanding is that Petitioner has relied on distinct embodiments and failed to provide any explanation regarding why it would have been obvious to modify the primary embodiment relied upon to incorporate, *e.g.*, the “intensity control” and “ratio control” circuits of FIG. 10 of Pohlert. Accordingly, claim 6 is not anticipated by Pohlert for this additional reason.

C. Pohlert Does Not Anticipate the Other Dependent Claims

192. Claims 2-5 and 7-22 ultimately depend from independent claim 1 discussed above. I believe that these claims are distinguishable over Pohlert at least for the reasons discussed above regarding claim 1. Claims 2-5 and 7-22 are thus not anticipated by Pohlert at least due to their dependence from claim 1.

D. Petitioner Did Not Articulate Any Obviousness Position Beyond Anticipation

193. While Ground 2 based on Pohlert as described in the Petition cited 35 U.S.C. 102/103 (Petition, 3-4), I do not believe that the Petition, nor the Wood declaration, sets forth any obviousness analysis beyond anticipation. While I am not an attorney, my understanding is that obviousness requires analyzing certain factors, which include an assessment of the content of the prior art reference and an identification of the differences between the prior art reference and the claims. *See* Section III.B *supra*. I further understand that in order to establish obviousness, there must be an articulated reason for modifying the Pohlert reference to arrive at the claimed invention.

194. I have reviewed the analysis set forth in the Petition and in the Wood Declaration regarding claims 1-22. I do not see that there is an analysis presented regarding the scope and content of Pohlert or identification of any limitation in the claims of the '258 Patent missing from Pohlert that would purportedly have been obvious to a POSITA based on Pohlert. Further, I do not see any rationale

provided in the Petition or the Wood Declaration articulating a reason to modify Pohlert in such a manner to arrive at the claimed invention, or any of the other factors for an obviousness analysis I summarize above.

195. Therefore, it is my opinion that the Petition, and the Wood Declaration, do not demonstrate that claim 1, and all claims depending therefrom, would have been obvious based on Pohlert for the same reasons as explained above regarding anticipation and because no further obviousness analysis was presented in the Petition.

196. For completeness, and in order to respond to the conclusory obviousness position alleged in the Petition, I have considered the matter and it is further my opinion that a POSITA would not have found claim 1 obvious in view of Pohlert. For example, in my opinion, it would not have been obvious to a POSITA to modify Pohlert to include the feature of “an effect simulator adapted to calculate a time varying lighting value.” Specifically, Pohlert discloses a manual lighting effects and pre-programmed lighting effects that may be recalled in a particular pattern or in a pseudo-random sequence. EX1003, ¶¶[0061]-[0067]. Pohlert lacks disclosure of the effects generator 543 (FIG. 5A embodiment) or the processor 574 (FIG. 5B embodiment) *calculating* a time varying lighting value based on at least one simulation parameter as I have detailed above. *See* Sections IX and XI.A. A POSITA would not have found it obvious to arbitrarily introduce

such functionality as there is no suggestion of any particular benefit for reconfiguring Pohlert's effects generator 543 or processor 574 to calculate time varying lighting values in this manner. Petitioner has not identified any reason to modify Pohlert to include the "effect simulator adapted to calculate a time varying lighting value" limitation, nor do I believe a POSITA would have been so motivated. Further, Petitioner, and Mr. Wood, did not offer any opinion that Pohlert could have been modified to include the "effect simulator adapted to calculate a time varying lighting value" limitation with a reasonable expectation of success.

XII. CONCLUSION

197. For at least the reasons set forth above, I am of the opinion the Challenged Claims would not have been obvious to a POSITA at the time of the invention of the '258 Patent based at least on the discussed prior art.

198. I understand that this Declaration is to be filed in an IPR proceeding before the PTAB. I acknowledge that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

199. I hereby declare under penalty of perjury that the foregoing is true and correct, 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 are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and may jeopardize the validity of the application or any patent issuing thereon. If called to testify as to the truth of the matters stated herein, I could and would testify competently.

Dated: June 16, 2022


Eric Bretschneider, Ph.D.