

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Videndum Production Solutions, Inc.
Petitioner,

v.

Rotolight Limited,
Patent Owner.

Case: To Be Assigned
U.S. Patent No. 10,197,258

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,197,258**

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LISTING OF EXHIBITS

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1001	U.S. Patent No. 10,197,258 to Gammons <i>et al</i>
1002	File History for U.S. Patent No. 10,197,258
1003	Declaration of Woody Smith (“Smith Decl.”)
1004	Showline SL PAR 155 Manual (“Showline”)
1005	Declaration of Martin Palmer (“Palmer Decl.”)
1006	U.S. Patent No. 8,632,208 to Choong (“Choong”)
1007	U.S. Patent No. 8,581,513 to Reinoso (“Reinoso”)
1008	U.S. Patent Application Publication No. 2012/0044374 to Pohlert (“Pohlert”)
1009	Institution Decision in IPR2021-01497 challenging the ’258 Patent
1010	Transcript of August 17, 2022 Deposition of Dr. Bretschneider
1011	Patent Owner’s First Amended Complaint Filed Against Petitioner
1012	Gottuso January 14, 2023 Email to the Board
1013	Board’s Dismissal of IPR2021-01497
1014	Email to Rotolight’s Litigation Counsel re: Stipulation

CLAIM APPENDIX

Asserted Claims of U.S. Patent No. 10,197,258

Claim	Claim Language
Claim 1[pre]	A lighting system comprising:
Claim 1[a]	a lighting device; and
Claim 1[b]	a controller adapted to control the lighting device to produce a user customisable cinematic lighting special effect selected from a range of different user customisable cinematic lighting special effects, the controller comprising:
Claim 1[c]	an input interface for receiving user input to enable a user to select user customisable cinematic lighting special effect from said range of different user customisable cinematic lighting special effects; and
Claim 1[d]	an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter,
Claim 1[e]	said at least one simulation parameter depending on the selected user customisable cinematic lighting special effect being simulated, and
Claim 1[f]	adapted to output said time varying lighting value to said lighting device so as to simulate the selected user customisable cinematic lighting special effect;
Claim 1[g]	wherein said lighting device and said controller are integrated in a combined unit.
Claim 2	The lighting system according to claim 1, wherein the input interface is adapted to receive user input to enable a user to customise said user customisable cinematic lighting special effect.
Claim 3	The lighting system according to claim 1, wherein the lighting device comprises at least one LED.
Claim 4	The lighting system according to claim 3, wherein the lighting device comprises multiple different coloured LEDs.
Claim 5	The lighting system according to claim 4, wherein the multiple different coloured LEDs comprise at least one of a RGB LED, and a RGB+W LED.

Claim	Claim Language
Claim 6	The lighting system according to claim 3, wherein 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.
Claim 7	The lighting system according to claim 3, wherein the lighting device comprises at least one ‘warm’ white and at least one ‘cool’ white LED.
Claim 8	The lighting system according to claim 6, wherein the lighting device is operable to produce light at a colour temperature typically in the range of 2800–7000 Kelvin.
Claim 9	The lighting system according to claim 3, wherein the controller is adapted to control the brightness of said LEDs in dependence on a user input received via the input interface.
Claim 10	The lighting system according to claim 1, wherein the simulation parameter comprises at least one of a colour and a colour temperature.
Claim 11	The lighting system according to claim 1, wherein the selected user customisable cinematic lighting special effect is designed to mimic at least one of fire; lightning; police car light; television; a neon flickering sign; a candle; muzzle (gunshot); welding; spark/short circuit; a scan (e.g. fingerprint scanner); paparazzi flashes; fireworks; flashes (strobe); a propeller; a (nuclear) explosion; and a wormhole.
Claim 12	The lighting system according to claim 1, wherein the controller is adapted to store said at least one simulation parameter in memory.
Claim 13	The lighting system according to claim 1, wherein the controller is adapted to control a plurality of lighting devices in dependence on the selected user customisable cinematic lighting special effect.
Claim 14	The lighting system according to claim 1, further comprising a further lighting device, said further lighting device being separate from said controller.
Claim 15	The lighting system according to claim 14, wherein the controller comprises a wireless communication interface adapted for wireless communication with said further lighting device.

Claim	Claim Language
Claim 16	The lighting system according to claim 13, wherein the controller is adapted to at least one of: offset and overlap the output of said plurality of lights with one-another so as to simulate a moving light source.
Claim 17	The lighting system according to claim 1, wherein the controller is separable from the lighting device.
Claim 18	The lighting system according to claim 1, wherein the input interface comprises at least one of: a wireless communication interface; a dial; a slider; a control panel; a display and buttons; and a touch screen.
Claim 19	The lighting system according to claim 1, further comprising a converter adapted to convert at least one of brightness and colour data from the simulator into lighting signals for output by the output.
Claim 20	The lighting system according to claim 1, wherein the lighting system is a lighting system for at least one of: videography; broadcast; cinematography; studio filming; and location filming.
Claim 21	The lighting system according to claim 12, wherein the controller is adapted to recall said stored at least one simulation parameter from said memory.
Claim 22	The lighting system according to claim 14, wherein said controller is adapted to control said further lighting device in dependence on the selected user customisable cinematic lighting special effect.

I. INTRODUCTION

Petitioner Videndum Production Solutions, Inc. (“Videndum”) challenges Claims 1-22 (“Challenged Claims”) of U.S. Patent No. 10,197,258 (“the ’258 Patent”). The Challenged Claims are directed to lighting systems that create lighting effects using a computer (processor) and a controller. The controller in the Challenged Claims includes a basic user “input interface” that allows a user to select and customize special lighting effects, and a so-called “effect simulator” to produce the selected effects after “calculating” the effect.

The ’258 Patent does not disclose anything new or non-obvious. The features of the claimed lighting systems were well known in the film/television industry long before the earliest effective filing date of the ’258 Patent. This fact is evidenced by the two primary references discussed in this Petition.

The first reference is a user manual for the Showline SL PAR 155 (the “Showline Manual”) (Ex. 1004). The Showline Manual discloses a luminaire that allows a user to select, customize, and reproduce lighting effects, all through an interface and control panel integrated into the light. The second reference—U.S. Patent Application Publication No. 2012/0044374 (“Pohlert,” Ex. 1008)—discloses a “lighting and effects generation system,” with an integrated “power controller” that allows a user to select and customize lighting effects.

These references anticipate and/or render obvious the Challenged Claims. Indeed, the Board has already found that there was a likelihood that at least one of the Challenged Claims was unpatentable based on these exact prior-art references and Grounds. Ex. 1009. On March 16, 2022, the Board instituted an IPR proceeding filed by Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (“ARRI”) based on *the same prior art presented in this Petition. Id.* at 18.

The ARRI IPR was terminated before a Final Written Decision following a settlement between ARRI and Rotolight Limited (“Patent Owner”). At the time of termination, Videndum informed the Board that it too was being accused of infringement, and requested that, in the interest of ridding the public of invalid patents, the Board issue a Final Written Decision as to the ’258 Patent despite the settlement. Ex. 1012. The Board declined to do so, but noted that Videndum was not time-barred from filing its own Petition challenging the ’258 Patent using the same prior art. Ex. 1013.

To advance the goal of the USPTO in “revisit[ing] and revis[ing] earlier patent grants...to improve patent quality and restore confidence in the presumption of validity that comes with issued patents,” Videndum requests that the Board institute IPR and find the Challenged Claims unpatentable. *See Code200, UAB, et al. v. Bright Data Ltd.*, IPR2022-00861, IPR2022-00862, Paper 18 at 5 (Aug. 23, 2022) (precedential).

II. IDENTIFICATION OF CHALLENGED CLAIMS

Petitioner requests IPR of Claims 1-22 of the '258 Patent on the following grounds, and requests that each claim be found unpatentable as set forth below. Additional evidence is set forth in the Smith Declaration (Exhibit 1003).

Ground	Claims	Basis	Prior Art
I	1-6, 8-14, 16-22	§ 102	Showline Manual
II	1-6, 8-14, 16-22	§ 103	Showline Manual
III	7	§ 103	Showline Manual in view of U.S. Patent No. 8,632,208 to Choong (“Choong”)
IV	15	§ 103	Showline Manual in view of U.S. Patent No. 8,581,513 to Reinoso (“Reinoso”)
V	1-22	§ 102	Pohlert
VI	1-22	§ 103	Pohlert

III. SUMMARY OF THE '258 PATENT

A. File History

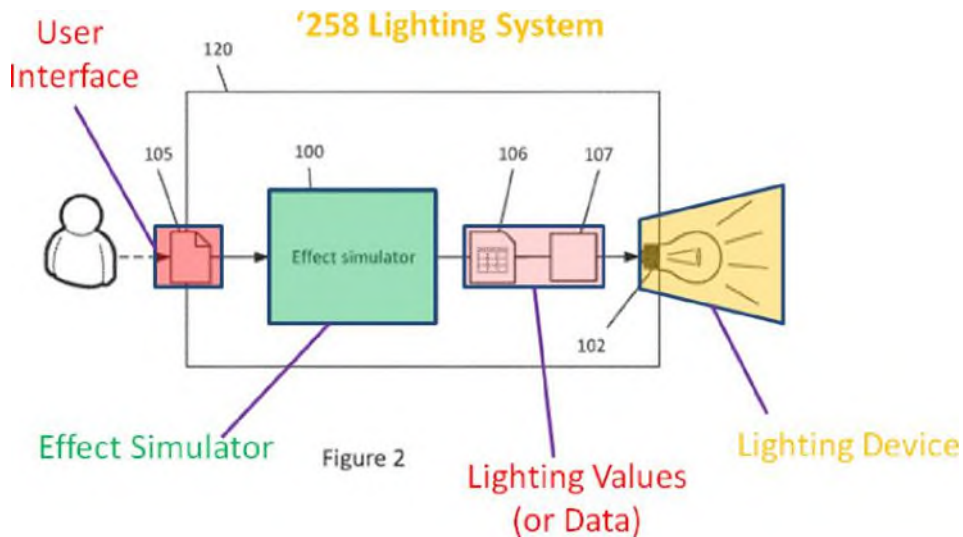
The '258 Patent was filed on December 21, 2017, and issued on February 5, 2019. The '258 Patent claims priority to U.S. Provisional No. 62/319,809, which was filed on April 8, 2016. During examination of the application that matured into the '258 Patent, no rejections over prior art references were made.

In the Notice of Allowance, the Examiner indicated that “the 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, said at least one simulation parameter depending on the selected user customisable cinematic lighting special

effect being simulated, and adapted to output said time varying lighting value to said lighting device so as to simulate the selected user customisable cinematic lighting special effect.” Exhibit 1002 at 596-599.

B. The '258 Patent

Claim 1 of the '258 Patent recites a “lighting system” that includes a “lighting device” and “controller” integrated into a combined unit. The “controller” is adapted to control the lighting device “to produce a user customisable cinematic lighting special effect selected from a range of different...effects.” Ex. 1001 at Claim 1. The controller includes a user “input interface” and an “effect simulator.” *Id.* The “input interface” enables “a user to select [an]...effect.” *Id.* The “effect simulator” then “calculates” a “time varying lighting value,” based on at least one “simulation parameter” (like brightness, color, speed, or frequency) depending on that effect, and outputs that value (or data) to the lighting device, “so as to simulate the selected...effect.” *Id.*



Id. at Fig. 2 (annotated).

The '258 Patent describes how a user can select desired lighting effects on the user interface. *Id.* at 6:4-11, 6:47-7:41. Depending on the desired effect, “simulation parameters,” such as “brightness,” “duration,” “colour,” and “frequency,” can be adjusted to customize the effect. *Id.* at 3:48-62, 6:47-7:16, 8:18-25, Fig. 6. These parameters may be random or user-selected, and are used by the “effect simulator” to “calculate” the data, or “time varying lighting values,” that characterize the effect and produce the effect. *Id.* at 7:29-46, 8:18-53.

The “effect simulator” is the component of the controller that “creates data 106 characterising a lighting effect.” *Id.* at 7:51-52, 5:54-58, 8:41-50. This data is described “in the form of “brightness and/or color values that vary over time” (*e.g.*, the claimed “time varying lighting values”) to produce the desired lighting effects. *Id.* at 8:41-50. Before this data is sent to the light102, to output light simulating the

effect, it may be converted by a “converter,” converting the data into a signal suitable for the particular light elements being controlled. *Id.* at 8:41-53. The lighting device 102 then outputs light simulating the desired effect.

IV. OVERVIEW OF THE PRIOR ART

A. Showline Manual

The Showline Manual describes certain features of the SL PAR 155 ZOOM RGBW LED Luminaire (“SL PAR”). Ex. 1004. The SL PAR was used in entertainment, cinematography, and studio lighting systems before the priority date of the ’258 Patent. Ex. 1005, ¶¶ 3-7.

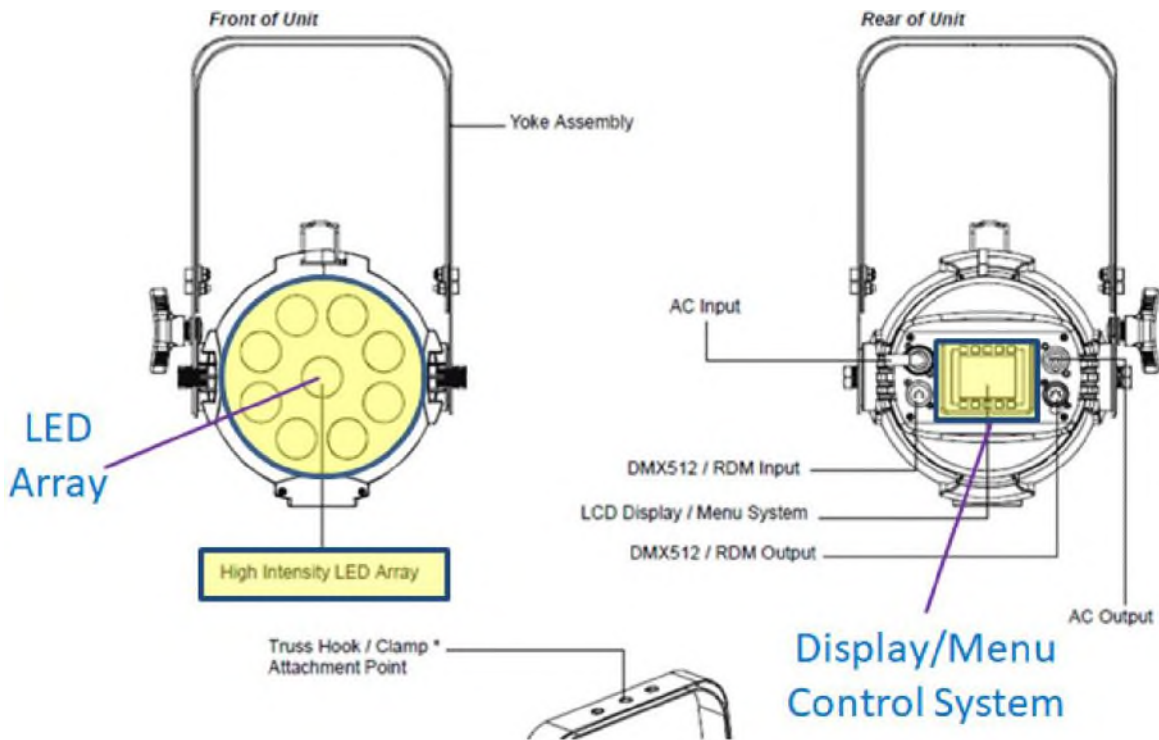
The Showline Manual is prior art to the ’258 Patent under at least 35 U.S.C. § 102(a)(1). The SL Par was first sold in 2013. *Id.*, ¶¶ 4-10. It bears a date of December 10, 2013, and was made publicly available, including to distributors and purchasers at least as early as December 2013, including via a Quick Start guide included in the product packaging and on Vari-Lite’s (then Philips) website. *Id.*, ¶¶ 4-10.

Mr. Palmer, a Vari-Lite employee with knowledge of the creation and distribution of Showline products, swears to the public accessibility of the Showline Manual. Ex. 1005, ¶¶ 1-13. Public accessibility is “the touchstone in determining whether a reference constitutes a printed publication.” *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009). To be “publicly accessible,” a reference must be

“disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.” *Id.* Public accessibility includes availability through commercial websites and avenues. *Id.* at 1316; *Centripetal Networks, Inc. v. Cisco Sys., Inc.*, 847 F. App’x 869, 878 (Fed. Cir. 2021).

The Vari-Lite brand, and its Showline range of products, were well-known in the entertainment lighting business. Ex. 1005, ¶¶ 6-7. The SL Par 155, which shipped with a Quick Start Guide directing users to a webpage where they could access and download Showline, was widely distributed in the United States in 2013 and 2014. *Id.*, ¶¶ 8-12. Showline Manual was also published on Vitec’s (then part of Philips’s) website since late 2013, allowing access to anyone.

The SL PAR has a “high intensity LED array” on the front of the unit and an integrated “LCD Display/Menu System” and inputs and outputs on the unit’s rear:



Ex. 1004 at Fig. 2 (annotated).

The integrated LCD Display and Menu System “provides local control” for features and functionality of the RGBW LED array. *Id.* at 14. The LCD Display and Menu System includes a user interface, with buttons allowing a user to navigate, access, and select menu settings. *Id.* at 14-15, Fig. 11. A user can select and customize desired lighting effects, such as “presets” and “chases,” which are run on the light. *Id.* at 15-17.

B. Choong

The application that matured into U.S. Patent No. 8,632,208 to Choong (“Choong”) was filed on November 7, 2008, and issued on January 21, 2014. Choong is prior art to the ’258 Patent at least under 35 U.S.C. § 102(a)(1). Choong

is directed to a system with a white color LED. Ex. 1006 at 1:6-17. Choong discloses light in the range of 2500k and 3700k representing warm white, 3700k and 500k representing white and 5000k and 7000k representing cool white. *Id.* at 2:57-63.

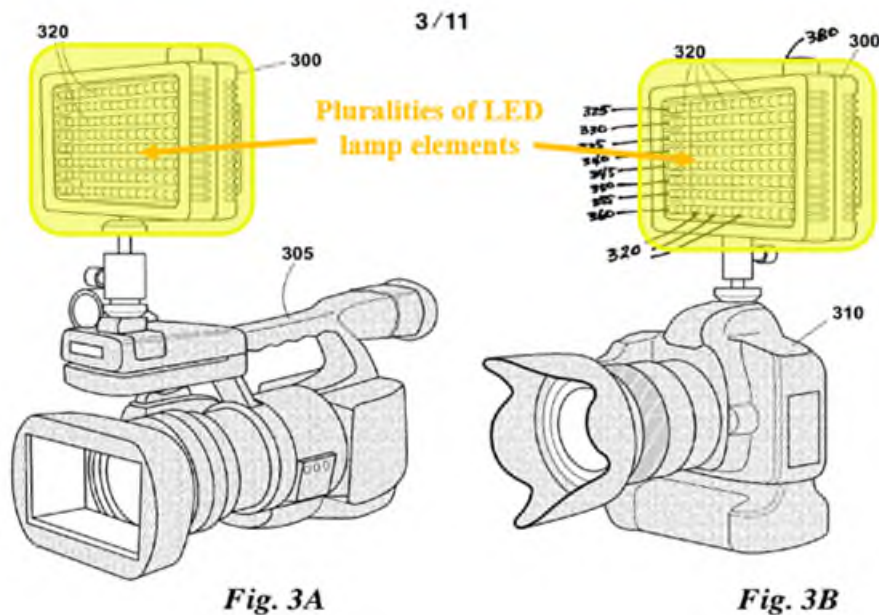
C. Reinoso

The application that matured into U.S. Patent No. 8,581,513 to Reinoso (“Reinoso”) was filed on April 20, 2012, and issued on November 12, 2013. Reinoso is prior art to the ’258 Patent at least under 35 U.S.C. § 102(a)(1). Reinoso is directed to “special event lighting” and a “modular, self-contained and networkable dynamic lighting system.” Ex. 1007 at 1:13-16. Reinoso describes a device that works with a DMX lighting system to allow for controlling multiple LED lights “to affect color, pattern and luminosity.” *Id.* at 1:47-51. Reinoso discloses wireless controllers that “can send signals to the lighting modules to turn them on or off, change the color of the light...change the program or pattern, intensity, change rate and control other effects.” *Id.* at 4:6-13.

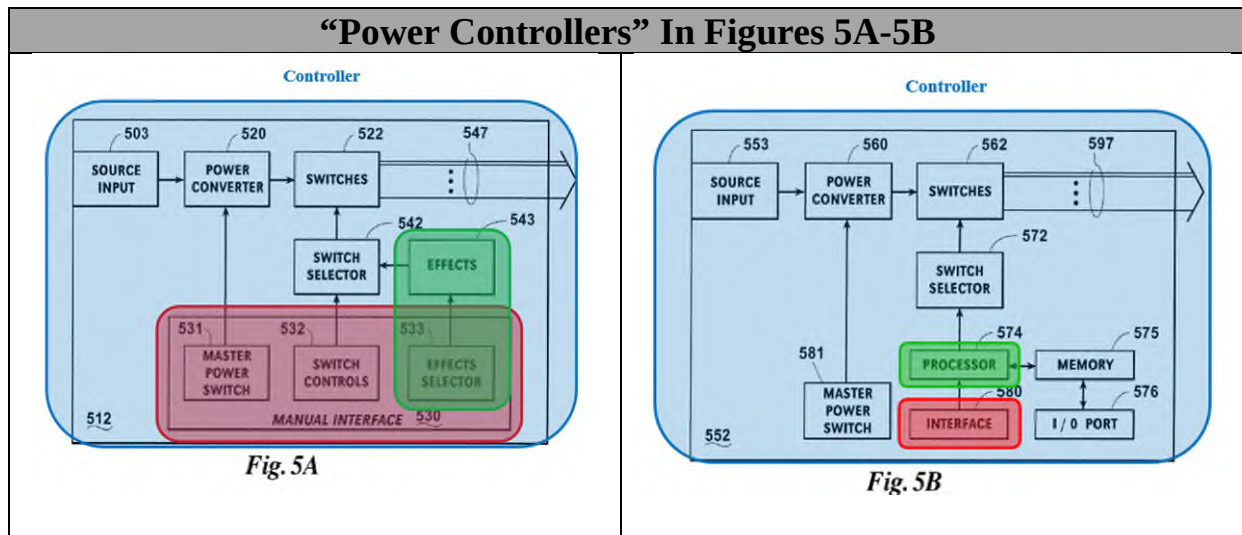
D. Pohlert

Pohlert is a U.S. patent application published on February 23, 2012, and is prior art to the ’258 Patent under at least 35 U.S.C. § 102(a)(1). Pohlert discloses a “lighting and effects generation system” (as shown in Figs. 3A and 3B) that includes LED lamps in a lighting frame, with a connected and dedicated “power controller.”

Ex. 1008 at Abstract, [0051], [0057]. The power controller includes (1) a user interface to select and customize lighting effects, (2) an “effects generator” that generates the selected effects, and (3) switches that convert the generated effects into power control signals output to the LEDs.



Ex. 1008 at Figs. 3A-3B (annotated).



V. LEVEL OF ORDINARY SKILL IN THE ART

As of the earliest effective filing date of the '258 Patent, a person of ordinary skill in the art ("POSITA") would have had at least a Bachelor of Science degree in electrical engineering, or a closely related field, with at least two years of experience in the design of entertaining lighting systems, and the design and use of LED lights.

VI. CLAIM CONSTRUCTION

Claims are interpreted under the *Phillips* standard. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under this standard, claim terms are given their plain meaning as understood by a person of ordinary skill in the art. *Id.*, 415 F.3d at 1312-13. Unless indicated otherwise in the arguments below, claim terms are given ordinary and customary meaning.

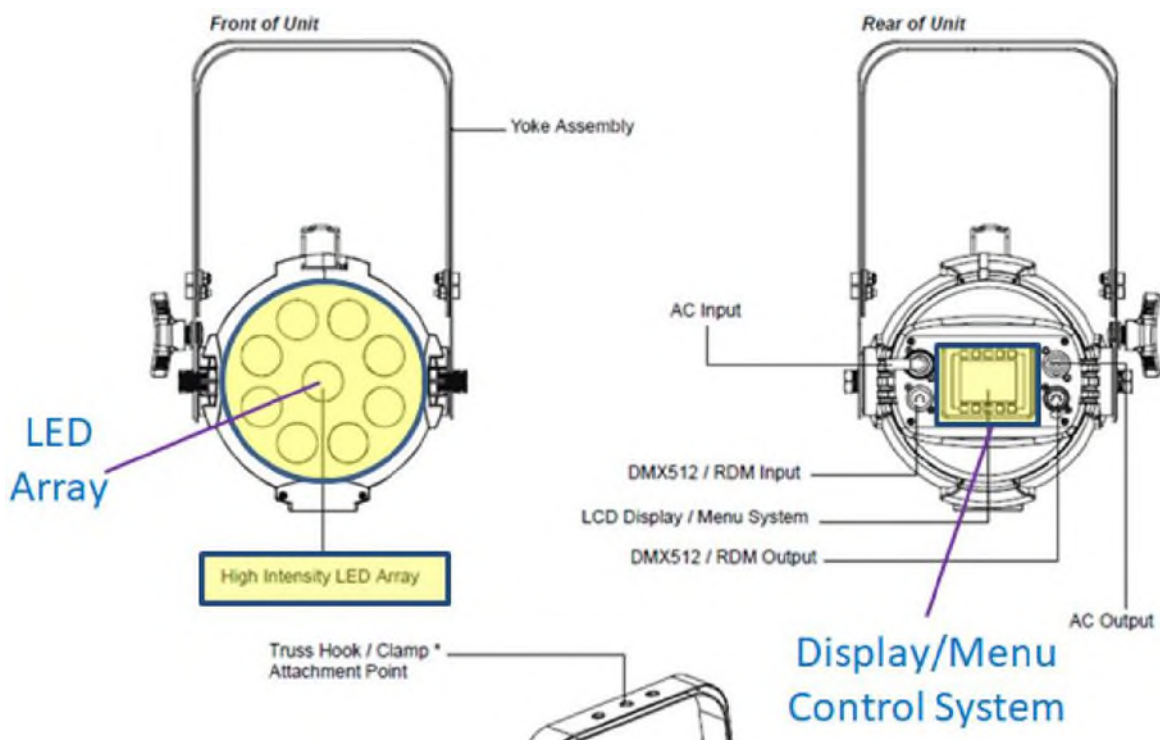
VII. GROUND I: THE SHOWLINE MANUAL ANTICIPATES CLAIMS 1-6, 8-14, AND 16-22

A. Claim 1

Showline Manual discloses each and every limitation of Claim 1. Ex. 1003, ¶ 49.

Claim 1[pre]

Showline Manual discloses a luminaire having a “high intensity LED array.” Ex. 1004 at 6, 42; Ex. 1003, ¶¶ 43-51. Showline Manual discloses a plurality of lighting effects, including presets, effects/chases, and strobe/timing, controlled through a “Display and Menu System” on the unit. Ex. 1004 at 14-17.



Id. at Fig. 2 (annotated); Ex. 1003, ¶¶ 43, 51.

Claim 1[a]

Showline Manual includes a “high intensity LED array.” Ex. 1004 at 6, 42. The LED arrays include “Color RGBW” LEDs. *Id.* at 42; Ex. 1003, ¶¶ 44, 52-53. These LEDs, individually and as an array, are “lighting devices” that provide illumination when running lighting effects. Ex. 1004 at 14-17; Ex. 1003, ¶¶ 43-44, 53.

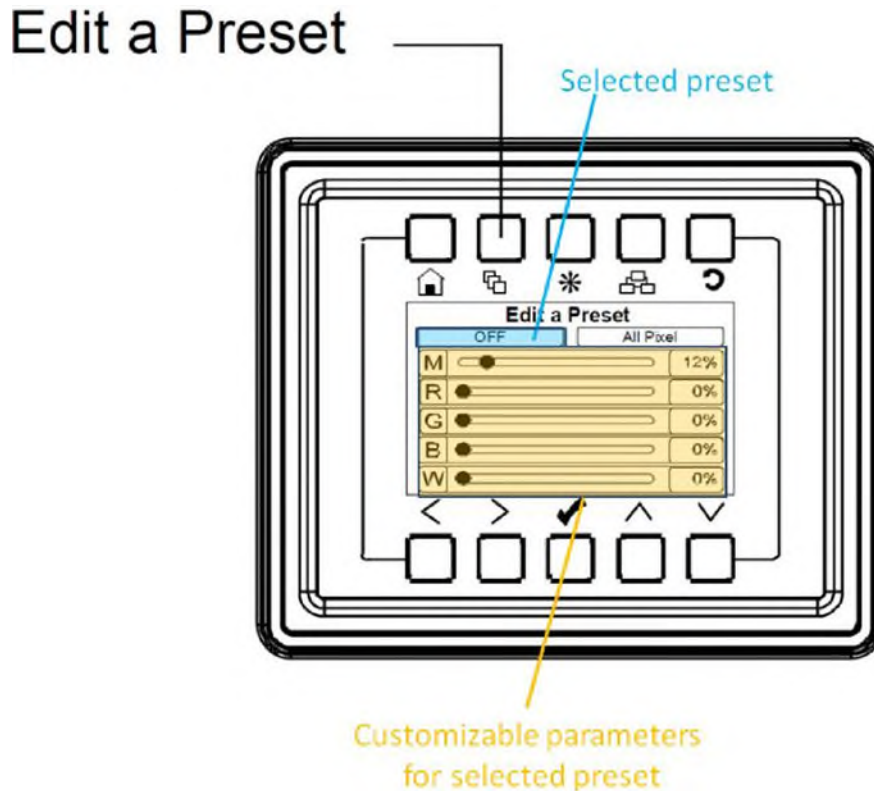


Claim 1[b]

Showline Manual discloses the “LCD Display and Menu System” provides “local control for accessing” fixture settings and can control the device and its LEDs. Ex. 1004 at 7, 14-15; Ex. 1003, ¶¶ 45-46, 54-55. The “local control” teaches the use of a controller adapted to control the lighting device. Ex. 1003, ¶¶ 47-48.

The device receives inputs from an interface, and recalls the appropriate settings for the LED array to produce customizable cinematic effects, including editable presets and eight editable “chases.” Ex. 1004 at 15-16, Fig. 11.

Presets may be customized through an “Edit a Preset” menu that allows users to adjust the master intensity (“M”), as well as color values (“RGBW”) for a preset. *Id.* at 15. The device produces lighting value settings for the LEDs, based on the selected parameter adjustments. *Id.* at 15-16.



Id. at 15 (annotated).

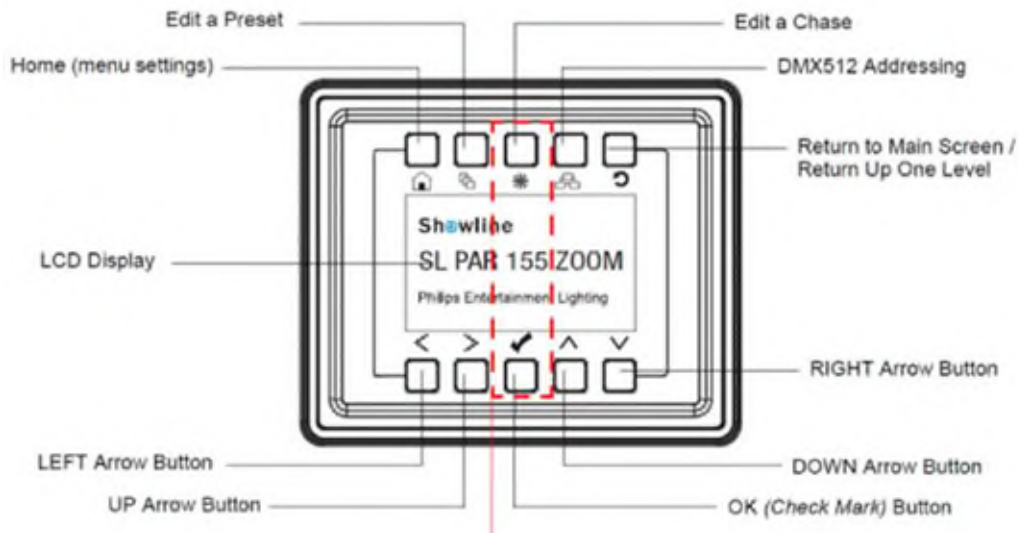
All chases may be customized through “adjustable parameters” that allow users to customize “the master intensity, speed, and fade values.” *Id.* at 16. The editable chases can be customized to create lighting effects by editing existing steps or adding new steps to a chase, with a user selecting parameters and using the buttons to make adjustments. *Id.* The LCD Display and Menu System produces lighting

value settings for the LEDs, based on these user selections and parameter adjustments. *Id.* at 16-17, Table 3; Ex. 1003, ¶ 47, 54-58.

Presets and chase effects can be customized through a “Strobe/Timing Menu” using a controller. Ex. 1004 at 17. The “Strobe/Timing Menu” allows users to select from additional adjustable parameters, which are “**instantly applied** to any active Preset, Color Filter, or chase.” *Id.* at 17 (emphasis added). If the luminaire is actively outputting lighting effects from the LED array, adjusting these parameters **instantly** causes the LCD Display and Menu System to adjust (*i.e.*, calculate and generate) the light output to match the new parameter values in real time. Ex. 1003, ¶¶ 48, 59. Table 4 summarizes user parameters that allow a user to customize an effect. Ex. 1004 at Table 4; Ex. 1003, ¶¶ 48, 59.

Claim 1[c]

Showline Manual discloses a user interface that receives user inputs, through buttons allowing a user to navigate the menus and make selections. Ex. 1004 at 14-15; Ex. 1003, ¶¶ 60-64. The LCD Display and Menu System interface allows a user to select customizable lighting special effects, including “Presets” and “chases.” Ex. 1004 at 15-17. The selectable chase effects include “10 factory defined chases and eight user adjustable chases.” *Id.* at 15-17.



Id. at Fig. 11.

The interface allows users to customize the available effects. Presets can be customized in the “Edit a Preset” menu to customize the intensity and color values for those presets. *Id.* at 15-16. Chase effects can be customized by selecting adjustable parameters through the menus on the interface, as described in Table 3. *Id.* at 16, Table 3.

The “Eight User chases can be further customized to create different effects on the fixture.” *Id.* at 17. When a user selects to “Edit a Chase” to further customize the chase lighting effect, an “Edit User Chase window will be displayed. Use the Up and Down buttons to select parameters and the Left and Right buttons to assign the different general fixture settings. When finished, press the Check button to exit the menu level.” *Id.* at 17.

A “Strobe/Timing menu” provides an interface for users to make additional customizations to any selected lighting preset or chase effect. *Id.* Users may select and assign “strobe and timing values from the menu system” that are “instantly applied to any active Preset, Color filter, or chase.” *Id.* These adjustable strobing/timing parameters, selectable through the user interface, include (a) adjusting the overall intensity level of the unit, (b) setting a strobe mode and strobe rate, (c) setting the duration of time each strobe flash remains on, (d) adjusting the time used to change intensity values when running a chase, and (e) adjusting the time used to change color values when running a chase. *Id.* These adjustable strobe/timing parameters are summarized in Table 4. *Id.* at Table 4.

Claim 1[d]

Claim limitation 1[d] requires an “effect simulator” that is adapted to “calculate a time varying lighting value based on at least on simulation parameter.” Ex. 1001 at Claim 1. Importantly, the ’258 Patent does not provide any detail as to how the “calculation” is purportedly performed, nor disclose a specific algorithm for performing the “calculation.” The ’258 Patent does not disclose a particular way in which “calculating” is performed.

The ’258 Patent instead broadly describes “calculating” as **creating** brightness or color information for a lighting effect. The patent discloses the “effect simulator” as a black-box (element 100 in Figures 2, 4) that “creates data 106 characterising a

lighting effect.” *Id.* at 7:51-52, 8:41-50. The data is the claimed “time varying lighting values,” and represent “brightness and/or color values that vary over time” that, when displayed by a lighting device, provide the desired lighting effect. *Id.* at 8:41-50; Ex. 1003, ¶ 66.

The Figures fail to disclose a specific algorithm or “calculation.” Figure 3 discloses that the “calculation” is performed by adjusting parameters and generating an effect:

Light control system	
Fire effect	
Parameter	Setting
More info Fire activity	<input type="range" value="50%"/> Low High
More info Fire colour	2000K
More info Peak brightness	80%
More info Baseline brightness	40%
More info Camera frequency	60Hz
☐ Colour Swing Blue ☐ Monochrome	

Figure 6

Ex. 1001 at Figs. 6, 3, 7:29-47. Nothing in the '258 Patent discloses *how* the lighting values are “calculated,” only that a user adjusts parameters and the lighting effect is created or generated by adjusting parameters.

The Showline Manual discloses Claim 1[d]. Ex. 1003, ¶¶ 65-69. The SL PAR's 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 on the SL Par. Ex. 1004 at 14-17; *supra* Claims 1[b]-1[c]. These LED setting values are time-varying lighting values that characterize the desired effect, and are provided to the LEDs to produce the proper light output over time, *e.g.*, the customized effect selected by the user. Ex. 1003, ¶¶ 67-68.

When a user adjusts the customizable parameters for a preset or chase, the LCD Display and Menu System, and the processor in the SL PAR, calculates new data values for the LED settings to match the adjustments. *Id.* The data values for the LED settings the LCD Display and Menu System sets for each preset and chase are based on user-selected parameters, including those Effect Parameters and Strobe/Timing Parameters in Tables 3 and 4. Ex. 1004 at 16-17, Tables 3-4. The data values for the LED settings calculated and set by the device are based on adjustable simulation parameters, including "intensity" (or brightness), "speed," "fade," "duration," "strobe rate," and "color timing." *Id.*

The Showline Manual discloses multiple ways a user can create lighting effects using the LCD Display and Control Menu, including creating "User Defined Chases," which requires the system to calculate (*i.e.*, create) lighting values based

on user-selected and adjusted parameters. Ex. 1004 at 14-17. There are “[e]ight User Chases” that “can be further customized to create different effects on the fixture.” *Id.* at 16-17. This customization includes adding new steps, as well editing existing steps to change parameters like color, intensity, speed, and fade. *Id.* at 15-16 (discussing customization of Presets). When parameters for a selected effect are changed, “calculation” (*i.e.*, creation of data) is required to create new values to send to the lights, to generate a lighting effect reflecting the adjusted parameters. Ex. 1003, ¶¶ 68-69.

Users can also change active Chases and Presets (as well as colors) running on the device through a “Strobe/Timing” menu, causing the device to “**instantly appl[y]**” changes to the intensity, strobe, duration of strobe flashes, timing of changes to intensity values, and color values—meaning lighting values must continuously be “calculated” (or created) to create new values for the LED settings representing adjustments as they are made. Ex. 1004 at 17, Table 4; Ex. 1003, ¶¶ 68-69. This “instant” application of changes based on user inputs is the same as the ’258 Patent’s “calculation.” Ex. 1001 at 8:65-67 (“The simulation may be performed on the fly, with lighting data values output from the simulator 100 to the light 102 in near-real time.”).

If Patent Owner argues that the Showline Manual does not disclose the “calculate” limitation, Patent Owner would contradict its own infringement

allegations. Patent Owner asserted in litigation that “calculating” in Claim 1 is satisfied by the inputting of “parameters” into a lighting device via a user interface, which in turn causes the lights to display a lighting effect. Ex. 1011 at 41. Patent Owner also asserts: “With an intuitive UI for fast menu selections and customizable pre-set buttons for quick recall of your favorite scenes and settings....” *Id.* Patent Owner cannot assert the opposite here, where a near-identical disclosure in the Showline Manual of adjusting parameters through an interface, which in turn produces a lighting effect based on those parameters, should not meet the “calculating” limitation. Ex. 1004 at 7, 15-17.

Claim 1[e]

Showline Manual discloses the “simulation parameters” a user may adjust depend on the selected preset or chase effects a user wants to edit and run. *See* Claims 1[b]-1[d]; Ex. 1003, ¶¶ 70-73. Users are presented with options to adjust certain parameters of presets and chases ***after*** selecting a particular preset or chase. Ex. 1004 at 15-17. As for presets, a user first selects a preset to edit using buttons to “scroll through” available presets. *Id.* After selecting a preset to edit, a user then “scroll[s] through the parameters” for that preset, and uses “left and right arrow buttons to make adjustments.” *Id.* The parameters adjusted depend on the effect being edited.

With respect to editable chases, a user first selects a particular chase to edit and is provided a menu allowing a user to make adjustments to parameters for that

particular chase. Ex. 1004 at 17. Adjustments to the parameters for editable chases are made by selecting a particular chase to edit, using arrow keys to “scroll through” adjustable parameters, and using “left and right arrow buttons” to adjust selected parameters. *Id.*; Ex. 1003, ¶¶ 71-72.

Finally, the “strobe/timing” parameters shown in Table 4 can be assigned to an “active Preset, Color filter, or chase.” Ex. 1004 at 17. Those parameters depend on the particular preset, color filter, or chase that is active. Ex. 1003, ¶ 73.

Claim 1[f]

Showline Manual’s interactive LCD Display Menu System allows a user to “recall” (or play) an edited preset or chase effect from the main menu, with the corresponding “stored values of the luminaire’s LED settings” for that preset or chase being sent to the LEDs so the effect can be “run” or implemented by the LED array. See Claims 1[b]-1[d]; Ex. 1003, ¶¶ 74-75. When a preset or chase is recalled and run, the lighting values for that effect, which vary over time to change the light outputs to create the effect, are output to the LED array and the effect is implemented. Ex. 1004 at 15-17; Ex. 1003, ¶ 75.

Additionally, “strobe/timing” values are “instantly applied to any active Preset, Color filter, or chase.” Ex. 1004 at 17. The LCD Display and Menu System instantly calculates and sends new LED setting values to implement strobe/timing adjustments with respect to the lighting effect being run. *Id.*; Ex. 1003, ¶¶ 76-79.

Adjustments to the “Color Timing” parameter are output to the LEDs to adjust “[t]he time used to change color values when running a chase.” Ex. 1004 at 17.

Claim 1[q]

Showline Manual’s LED array is located on the front of the unit, and the LCD Display and Menu System (providing “local control” of the unit) is located on the rear of the same unit. *Id.* at Fig. 2; Ex. 1003, ¶¶ 80-81. Showline Manual teaches that the lighting device (*e.g.*, LEDs) and controller (*e.g.*, LCD Display and Menu System) are integrated into a single combined unit. Ex. 1003, ¶ 81.

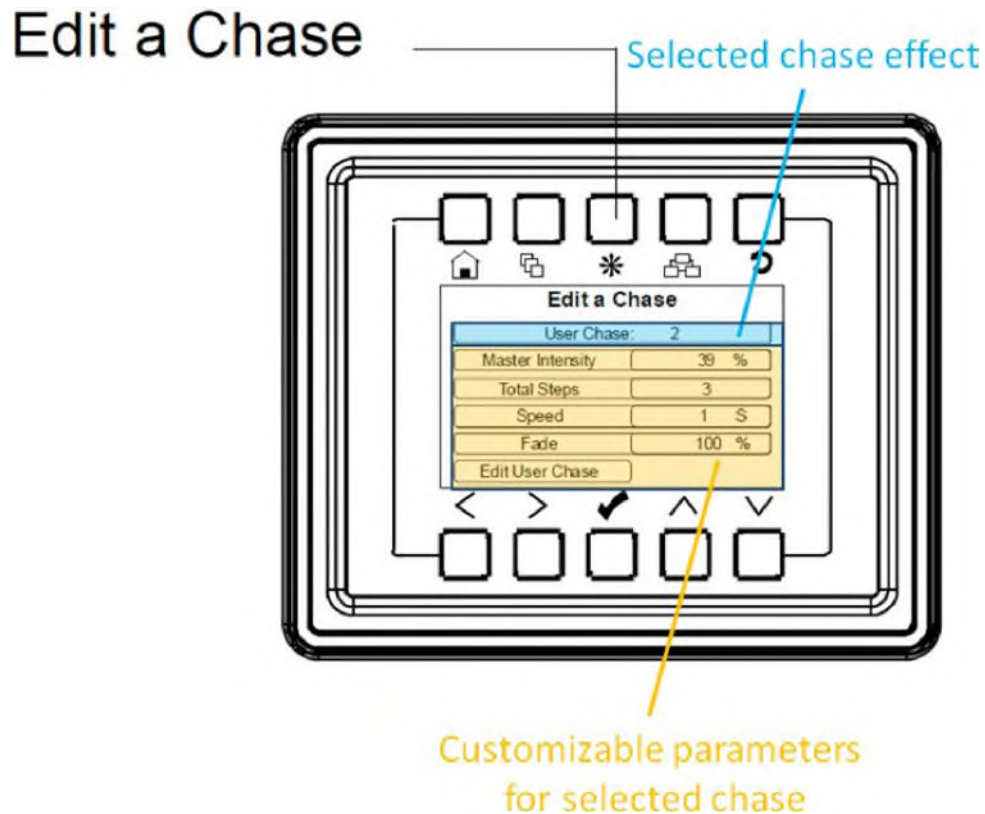
B. Claim 2

The interface on Showline Manual enables a user to select and edit presets and chases, to add strobe/timing adjustments to any preset or chase, and to create desired effects. *See* Claim 1[c]; Ex. 1003, ¶¶ 82-86. Menu options allowing a user to edit presets and chases to customize the selected effects are shown in Figure 11. Ex. 1004 at Fig. 11.

As shown in Claims 1[b]-1[c], the LCD Display and Menu System allows users to navigate and make selections to adjust parameters of lighting values for editable presets and chases, including intensity, duration, timing and colors. *Id.* at 15-17, Tables 3-4. By using the up/down/left/right buttons, users can edit presets to adjust selected parameters, and assign and adjust strobe and timing parameters to any preset or effect. *Id.* at 15-17. Preset color parameters can be edited by changing

“RGBW” or “HSIC” (hue, saturation, intensity and color correction) parameters. *Id.* at 15.

The LCD Display and Menu System provides menus for a user to select and customize chase effects, including intensity, speed, fade and colors. *Id.* at 16-17.



Id. at 17 (annotated).

C. Claims 3, 4, and 5

The Showline Manual discloses Claims 3-5 as it discloses an RGBW LED luminaire. Ex. 1003, ¶¶ 87-89.



The Showline Manual includes an array of nine RGBW LEDs. Ex. 1004 at 42, 15, 17, 21, 28-29 (referencing control of RGBW LEDs).

D. Claim 6

The color of the LEDs in the Showline Manual can be controlled based on user inputs in, for example, the “Edit a Preset,” “Edit a Chase,” and “Strobe/Timing” menus provided on the LCD Display and Menu System. Ex. 1004 at 15-17; Ex. 1003, ¶¶ 91-92.

In the “Edit a Preset” menu, a user can adjust the “RGBW” or “HSIC” parameters to change the color that will be output by the LEDs for that particular

preset. Ex. 1004 at 15. Users can select “presets or color filters” to apply to each step in the chase. *Id.* at 17. Assigning a preset or color filter to a step controls the color the LEDs will output for that particular step in the chase. Ex. 1003, ¶¶ 93-94. The Showline Manual also discloses that the “Edit a Chase” menu allows adjustments to “RGBW” or “HSIC” parameters to change the color. Ex. 1004 at 17.

In the “Strobe/Timing” menu, selected changes to “Color Timing” are implemented by the LCD Display and Menu System to control timing changes between different colors in a chase effect. *Id.* at 17. That is, when a chase effect includes multiple colors, the “Strobe/Timing” menu controls the timing of changes between these different colors. Ex. 1003, ¶ 95.

In addition to color adjustments discussed above, the Showline Manual also discloses that “color temperature” is also adjustable. *Id.*, ¶¶ 96-99. In particular, the “Color Temperature” is “user adjustable” between “2700 - 6,500K.” Ex. 1004 at 42, 25 (color presets included “White” values at temperatures between 2700K and 10000K), 30 (correlated color temperature (CCT) control through DMX settings). DMX is a common control protocol standard used in the entertainment lighting industry. Ex. 1003, ¶ 97.

A POSITA would understand from Showline Manual that user adjustment of color temperature would be done through the LCD Display and Menu System. Ex. 1003, ¶ 100. The LCD Display and Menu System is described as providing “local

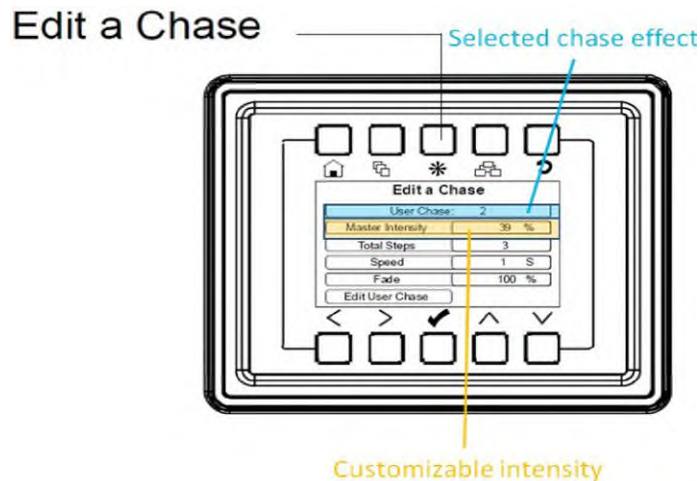
control” of the fixture settings. Ex. 1004 at 14. A POSITA would recognize that a user-adjustable color temperature would be one of these fixture settings. Ex. 1003, ¶ 100. The Showline Manual disclose the LCD Display and Menu System can access RGBW and HSIC parameters based on DMX maps. Ex. 1004 at 15, 17. The Showline Manual, in showing the DMX mapping for the HSIC parameters, indicates that one is “variable control of correlated color temperature (CCT),” which can be adjusted between “2700-6500K.” *Id.* at 30. These DMX control settings can be made available to the user through the LCD Display and Menu System, and a POSITA would understand that the LCD Display and Menu System can implement these color temperature adjustments. Ex. 1003, ¶ 101.

E. Claim 8

Showline Manual discloses the “color temperature” of the LED array is “user adjustable” and operates in the range of 2700-6500K. Ex. 1004 at 42; Ex. 1003, ¶ 102. In other modes, color presets which may be implemented by the SL PAR include “10000K,” “8000K,” “6500K,” “5600K,” “5000K,” “4500K,” “4000K,” “3200K,” “3000K,” and “2700K.” Ex. 1004 at 25, 27. Showline Manual is operable to produce light at a color temperature in the claimed range. Ex. 1003, ¶ 103.

F. Claim 9

The LCD Display and Menu System controls the intensity (or brightness) of the LEDs based on user inputs in the “Edit a Preset,” “Edit a Chase,” and “Strobe/Timing” menus. See Section VII.A (Claims 1[b]-1[d]); Ex. 1003, ¶¶ 104-105. The Showline Manual indicates that “the master intensity” for any selected chase may be adjusted using “Up and Down” and “Left and Right” buttons on the LCD Display and Menu System. Ex. 1004 at 16, Table 3. Through the “Edit a Chase” and “Strobe/Timing” menus, users can adjust the “master intensity” of the LED output. *Id.* at 16-17.



Id. at 17.

G. Claim 10

Showline Manual discloses that the adjustable parameters include selections of color filters and user adjustable color temperature. Ex. 1004 at 14, 17, 24, 42; Ex. 1003, ¶¶ 106-107. A user can change the color and color temperature of the LED

elements by changing color and temperature control parameters, including for chase effects. *See* Section VII.D.

H. Claim 11

Showline Manual discloses that the user-selected, customizable effects can include at least flashes (strobe). Ex. 1004 at 16-17. Chase effects can include “[s]trobe mode,” and “rate settings,” and “the time each strobe flash remains ON” in a chase effect can be adjusted based on user selections. *Id.* at 17, 28-29, Table 4.

A POSITA would also understand from the Showline Manual that the editable chases, which include various colors, flashing, and strobing, would produce other effects in Claim 11, including at least a police light, lightning, paparazzi flashes, welding, sparking, a fire or candle, and neon signs. Ex. 1003, ¶¶ 108-111. A chase with flashes or strobes of varying color, duration and intensity would produce light that simulates lightning, paparazzi flashes, and welding and spark/short circuit effects, and a chase flashing alternating blue and red lights would produce light that simulates a police car light. *Id.*

I. Claims 12 and 21

Showline Manual discloses a user may input parameters such as by editing values using the LCD Display and Menu System, and once all values are adjusted as desired, pressing a “Check Mark” button saves the adjusted parameters. Ex. 1004 at 15-16; Ex. 1003, ¶¶ 112-116. When the “Check Mark” is selected, a “Save Preset

Menu” option appears, and users can “select the preset number to save.” *Id.* at 15-16. These saved values can then be “recalled via the menu.” *Id.* at 16.

Users can adjust parameters for any chase, including the ten factory defined chases and the eight user editable chases. *Id.* at 16. Users can use buttons to select parameters, and then press a “Check button” to save the parameters. *Id.* These parameterized chases can be “recalled” through the menu system. *Id.* A user can “edit and save” the user-editable chases in the “Edit User Chase” menu, and when all editing steps are done, a user pushes a “Return to Main Menu” button and the “user chase is now saved and can be recalled.” *Id.* at 17.

A POSITA would understand from the Showline Manual that the adjusted values and parameters selected by the user would be “stored” in memory in the SL PAR unit. Ex. 1003, ¶ 117.

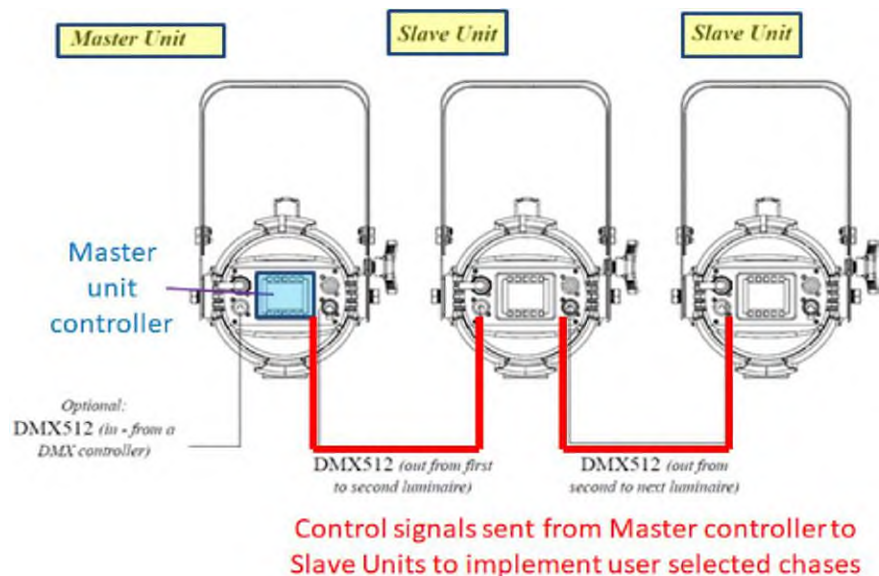
J. Claim 13

Each of the nine LEDs contained in the SL PAR disclosed in Showline Manual is a lighting device. *See* Section VII.A (Claim 1[a]); Ex. 1003, ¶¶ 118-119. The LCD Display and Menu System controls this plurality of nine LED “lighting devices” in the SL PAR. *See* Section VII.A (Claim 1[b]-1[c]).

The LCD Display and Menu System in one SL PAR can act as a “Master” controller and control a plurality of “Slave” devices. Ex. 1004 at 23. In particular, “[t]he Master/Slave Operational Mode allows one [SL PAR] to act as the ‘Master’

unit and all other connected units are controlled by this unit. When a unit is set to ‘Slave’ mode, it will only listen to and follow any commands sent from a ‘Master’ unit. Only one ‘Master’ unit is allowed in this type of operation.” *Id.*

In the “Master/Slave” mode, user-selected “presets and chases” made through the LCD Display and Menu System “recalled [i.e., played] on the master will automatically play on the slaves without having to program the slaves.” *Id.* Thus, the plurality of “slave” units are controlled by the “master” unit, based on the user-selected, edited, and adjusted chase effects that are recalled to run on the master. Ex. 1003, ¶¶ 120-121.



Ex. 1004 at Figs. 13 (annotated), 10, 23.

K. Claim 14

In the “Master/Slave” mode, the “slave unit”, with their LED arrays, are controlled by and separate from the “master unit” (and its LCD Display and Menu System). See Section VII.J; Ex. 1003, ¶¶ 122-124; Ex. 1004 at Figs. 13, 10, 23.

L. Claim 16

The LCD Display and Menu System controls the plurality of LEDs in the array of nine LEDs. See Section VII.A (Claim 1[b]-1[e]); Ex. 1003, ¶¶ 125-126. The LCD Display and Menu System can at least offset or overlap the flashing of these LEDs to simulate a moving light source.

In creating and producing chase effects, the LCD Display and Menu can set different steps in a chase, along with intensity and fade values for each step. Ex. 1004 at 16-17. Changing the intensity and fade values for the LEDs in implementing these chases simulates a moving light source, with the LED outputs overlapping to create the light with the appropriate fading. *Id.*; Ex. 1003, ¶¶ 127-128. When the light produced by the LEDs in a step fades, it provides the appearance of a light moving farther away until it is no longer visible (such as a flare shot off into the distance). Ex. 1003, ¶ 129.

In the “Master/Slave” mode, the slave units “mimic the master unit’s operation in all cases.” Ex. 1004 at 24. User-selected “presets and chases” made through the LCD Display and Menu System “recalled on the master will automatically play on

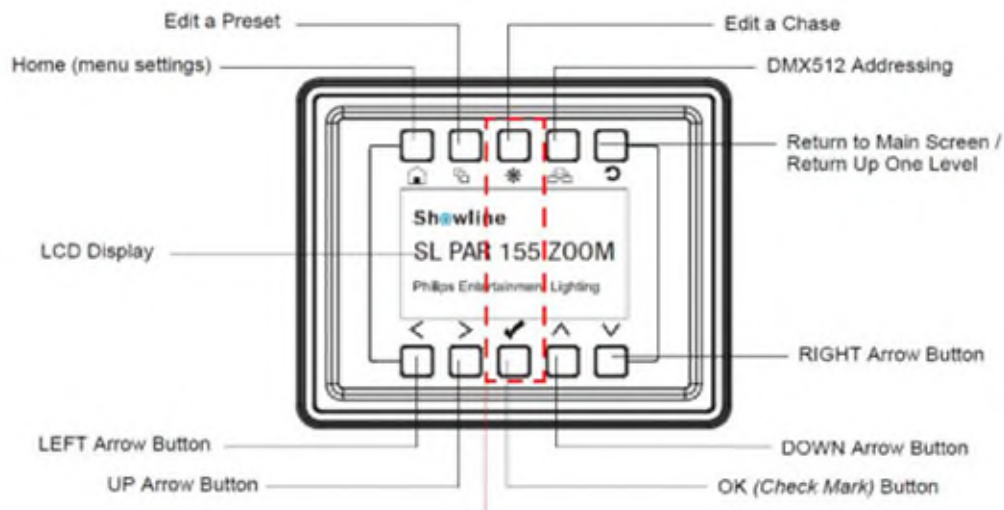
the slaves without having to program the slaves.” *Id.* Thus, the master unit’s LCD Display and Menu System is adapted to at least overlap the output of the LED arrays in the master and slave units when running chase effects, simulating a moving light source when steps of the chase effect as implemented across the SL PAR units include, for example, all lights brightening at the same time to mimic an approaching train light. Ex. 1003, ¶¶ 128-130.

M. Claim 17

In addition to being able to control the SL PAR via the LCD Display and Menu System, Showline Manual discloses a separable DMX512 control source may be used to provide **the same controls**. Ex. 1004 at 9-10, 19-20; Ex. 1003, ¶¶ 131-132. “Presets are stored values of the luminaire's LED settings that can be recalled via the menu system or DMX,” color filters “can be recalled via the menu system or DMX,” and “Effects are chases stored values of the luminaire’s LED settings that can be recalled via the menu system or DMX.” Ex. 1004 at 16. The DMX512 control source is physically attached to the unit through a DMX “cable” connector, connecting the DMX512 control source and SL PAR unit. *Id.* at 10; Ex. 1003, ¶ 133. This DMX512 controller, however, can be disconnected from the device (including its LED array) and is therefore separable. *Id.*

N. Claim 18

The LCD Display and Menu System includes an LCD “display” with selectable menu “buttons.” See Section VII.A (Claim 1[c]); Ex. 1003, ¶¶ 134-135.



Ex. 1004 at Fig. 11. Showline Manual also discloses the use of a wireless communication interface in the form of a DMX controller that would have a dial or a slider. *Id.* at 9-10, 19-20. Further, the Showline Manual discloses a touchscreen. *Id.* at Fig. 11.

O. Claim 19

The “converter” ensures the signals are of the proper type to be input into the LEDs or other light elements. A POSITA would understand that the Showline Manual includes the claimed “converter.” Ex. 1003, ¶¶ 136-137. The LEDs in the SL PAR are “15 Watt High Power LED Chipsets.” Ex. 1004 at 42. A POSITA would understand that Showline Manual discloses a converter to change command

signals reflecting the desired lighting effects and values into power signals that are provided to these chipsets, such that the LEDs can output the appropriate lighting colors and intensities over time to produce the desired light output. Ex. 1003, ¶ 138. Specifically, the color and intensity (brightness) values for the presets and chases (see Section VII.A and D (Claims 1[d], 6)) are converted by LED driver circuitry in the SL PAR to lighting signals sent to the LED chipsets to cause the LEDs thereon to output the appropriate light. Ex. 1004 at 10, 14-17, 22-36; Ex. 1003, ¶ 139.

P. Claim 20

A POSITA would have known, and understood from the disclosures, that the SL PAR was used for videography, broadcast, cinematography, studio filming, and location filming. Showline was a brand name of Vari-Lite, a company that manufactured luminaires for film, TV, and theatrical use. Ex. 1005, ¶ 7; Ex. 1003, ¶¶ 140-143. As was also known, the SL PAR was designed and sold for such end uses. Ex. 1005 at ¶ 7; Ex. 1003, ¶¶ 141-142.

The Showline Manual discloses mounting SL PAR units to trusses or in hanging applications, such as would be done in studio filming applications, and further discloses that SL PAR units may be mounted to the floor. Ex. 1004 at 11-12, Figs. 7-9. A POSITA would recognize the truss and floor mounting configurations shown are typical configurations for mounting such luminaires in videography, broadcast, cinematography, studio filming, and location filming

settings. Ex. 1003, ¶ 142. Indeed, these truss and floor mounting configuration are lighting set ups for studio filming applications, where a studio stage is illuminated with various luminaires mounted to trusses above the stage, and also from luminaires mounted to the floor that provide light illuminating scenes from below. *Id.* Further, a POSITA would understand the references to the DMX512 control protocol in the Showline Manual (*see, e.g.*, Ex. 1004 at 14, 24-39) indicate the SL PAR was for use in TV, cinematography, and studio filming, as this is a common communication standard created by and for the entertainment lighting industry. Ex. 1003, ¶¶ 143-144.

Q. Claim 22

In the “Master/Slave” mode, the LCD Display and Menu System in the “master unit” controls the LED arrays in the “slave” units, based on the user-selected effects recalled (or played) on the master unit. An effect selected on the “master unit” via its LCD Display and Menu System is run (or played) on the “slave” units. *See* Section VII.I; Ex. 1003, ¶¶ 145-147.

**VIII. GROUND II: THE SHOWLINE MANUAL RENDERS OBVIOUS
CLAIMS 1-6, 8-14, and 16-22**

Claims 1-6, 8-14, and 16-22 would have been obvious to a POSITA based on Showline Manual. A patent claim is unpatentable where “the differences between

the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious” to a POSITA. 35 U.S.C. § 103.

The prior art is extremely close, if not identical, to the ’258 Patent. If an alleged silence in a reference (*e.g.*, that a prior art reference does not explicitly use the word “calculate” or describe a “calculation” in detail—much like the ’258 Patent itself) is a purported “difference” between the prior art and the claimed invention in the context of anticipation, such “difference” would have been obvious to a POSITA based on the same evidence that supports anticipation. *See, e.g.*, Ex. 1003, ¶¶ 148-159 (a POSITA would understand Showline to disclose the “calculating” limitation); *Id.*, ¶¶ 150, 159-160. It is axiomatic that evidence capable of establishing anticipation may also provide the underlying factual bases for obviousness. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (“[I]t is well settled that ‘a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for ‘anticipation is the epitome of obviousness.’”) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

A patent can “be obvious in light of a single prior art reference if it would have been obvious to modify that reference to arrive at the patented invention.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016); *see also Takeda Chem. Indus., Ltd. v. Alphapharm Pty. Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. 2007). Reference to common knowledge of a POSITA is appropriate in a single

reference obviousness analysis when explained with sufficient reasoning. See *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337 (Fed. Cir. 2020) (affirming PTAB’s finding of obviousness based on single prior art reference).

A. Claims 1-6, 8-14, and 16-22 Are Disclosed By Showline Manual, and Would Have Rendered These Claims Obvious

As explained in Ground I, Claims 1-6, 8-14, and 16-22 are expressly disclosed in the Showline Manual. For this reason, these claims would have been obvious to a POSITA.

B. Claim Limitation 1[d] Would Have Been Obvious to a POSITA Based on Showline Manual

If the Board finds that Claim limitation 1[d] is not expressly disclosed in the Showline Manual, Petitioner asserts that it would have been obvious to a POSITA. As explained in Section VII.A (Claim 1[d]), the ’258 Patent does not provide *any* specifics regarding how the “calculation” is purportedly performed. A POSITA would understand that the effect simulator’s use of the user input parameters to generate or create the lighting effect is done by a calculation (*i.e.*, taking the sum of the parameter values to generate a lighting effect matching those numeric parameters). Ex. 1003, ¶ 150.

This is not new or unique. Patent Owner’s own expert (Dr. Bretschneider) repeatedly testified that the “calculating” limitation—the heart of what Rotolight says it invented—is something “routine” that would “be within the knowledge” of a

POSITA. Ex. 1010 at 149:11-153:9, 153:19-154:18, 155:4-6, 165:9-11, 176:16-19. He further testified that no algorithm needs to be disclosed in the patent because the “calculating” limitation is just something “routine” that would “be within the knowledge” of a POSITA. *Id.* at 149:11-153:9, 185:7-188:13.

A POSITA would understand that the Showline Manual discloses that the effects, like Chases, do not exist until a user creates and adds or edits each new step/parameter for the effect. Ex. 1004 at 17 (chases are “customized to create different effects”); Ex. 1003, ¶ 158. If the effect does not exist until the user creates it, it is not pre-recorded and is generated as disclosed in the ’258 Patent. Ex. 1010 at 149:11-153:9, 185:7-188:13, 395:20-398:4, 444:16-446:18. New lighting values would have to be created (*i.e.*, “calculated”) each time a user adjusts the parameters of an effect, adds a new step to a Chase with new parameters, or adds Strobe/Timing parameter adjustments to an active effect. Ex. 1004 at 14-18; Ex. 1003, ¶ 159. A POSITA would understand that the specific data (*i.e.*, brightness and color values) for an effect—like a customized Chase—is created ***after*** the user selects the effect and customizes its parameters. *Id.*

Claim 1, including the “calculate” limitation, and its dependent claims would have been obvious to a POSITA. Ex. 1003, ¶ 159.

C. Claim 20 Would Have Been Obvious to a POSITA Based on the Showline Manual

If the Board finds that Claim 20 is not expressly disclosed in the Showline Manual, it would have been obvious to a POSITA. As explained in Section IV.A, it was well-known that Showline products were designed to be used for lighting effects for cinematography and studio filming. Ex. 1005, ¶ 7. The Showline Manual's disclosure of mounting the units to trusses or in hanging applications would be done in studio filming applications. Ex. 1004 at 11-12; Figs. 7-9. A POSITA would have recognized the truss and floor mounting configurations shown are typical configurations for mounting such luminaires in videography, broadcast, cinematography, studio filming, and location filming settings. Ex. 1003, ¶¶ 142, 159.

A POSITA would understand the references to the DMX512 control protocol in the Showline Manual (Ex. 1004 at 14, 24-39) indicate Showline was for use in TV, cinematography, and filming, as this is a common communication standard for these industries. Ex. 1003, ¶¶ 143-144, 159.

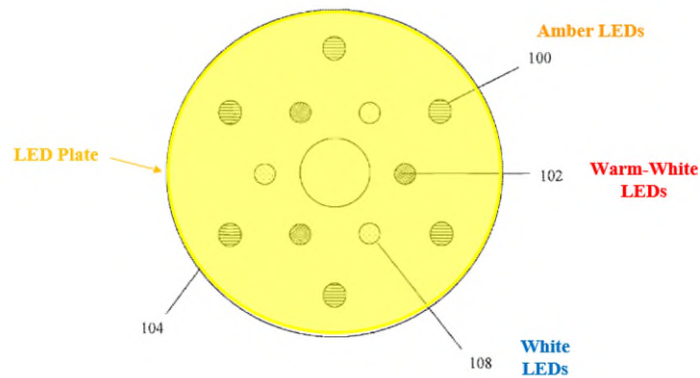
IX. GROUND III: THE SHOWLINE MANUAL IN VIEW OF CHOONG RENDERS OBVIOUS CLAIM 7

Claim 7 would have been obvious to a POSITA based on the Showline Manual in view of Choong. Ex. 1003, ¶ 160. The Showline Manual discloses each limitation of Claim 1. See Section VII.A. Claim 7 requires that the lighting device comprise a “‘warm’ white and at least one ‘cool’ white LED.” The '258 Patent

describes “warm” white LEDs as having temperatures in the range of 2800K and “cool” white LEDs as having temperatures in the range of 7000K. Ex. 1001 at 8:54-64.

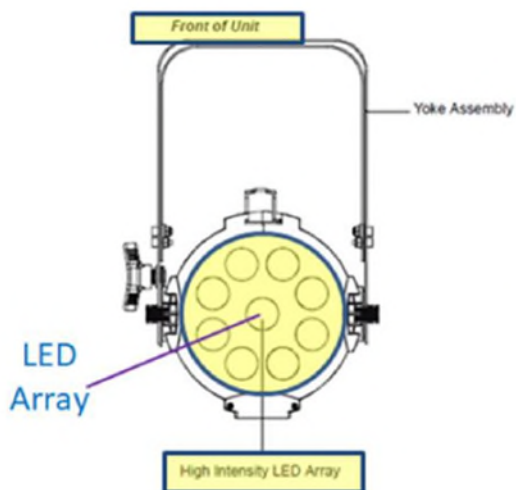
Showline Manual discloses LEDs that can be “RGBW” (red, blue, green, and white), and can produce white light in the temperature ranges of 2800K and 7000K. Ex. 1004 at 25, 42. The SL PAR can make color corrections to produce a “Cool White/Warm White” using a “Harmonize Color Calibration” feature. *Id.* at 21.

Choong, in the same field of art as the Showline Manual, discloses a controllable LED light source comprising a plurality of LEDs to produce white light output at different color temperatures. Ex. 1006 at Abstract, 2:56-63. Choong discloses using both “warm” white and “cool” white LEDs, teaching a method and system of “creating lighting of white colour with the intended CCT [correlated color temperature] to ease the user to control CCT of white lighting sources when the lighting source contains a plurality of cool white LEDs (not shown), white LEDs (108), warm white LEDs (102) and amber LEDs (100).” *Id.* at 2:56-63, 4:39-55, 5:7-12.

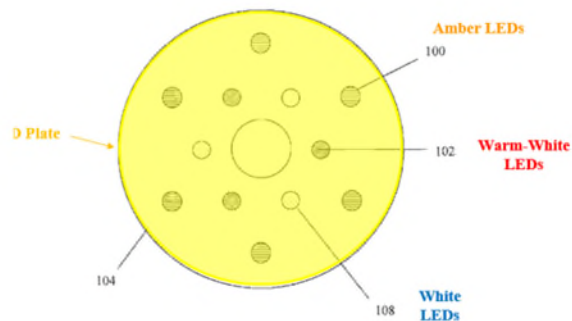


Id. at Fig. 1 (annotated).

It would have been obvious to a POSITA to use the well-known “cool” white and “warm” white LEDs disclosed in Choong in the LED array of the Showline Manual. Ex. 1003, ¶¶ 161-164. Choong and the Showline Manual are analogous art and disclose LEDs provided in array that are controlled to produce desired white light temperature output:



Showline Manual



Choong

Compare Ex. 1004 at Fig. 2 (annotated), 14-17, 21, *with* Ex. 1006 at Fig. 1 (annotated), 4:39-5:12; Ex. 1003, ¶ 166.

A POSITA would have recognized that using the “warm” and “cool” white LEDs in Choong with the Showline Manual would be the expected use of such well-known LEDs. Ex. 1003, ¶ 165. A POSITA would have been motivated to use the “cool” and “warm” white LEDs taught in Choong in the Showline Manual to achieve the same white light across a range of color temperatures, without needing extra power or increased LEDs of combined colors. Ex. 1003, ¶ 166.

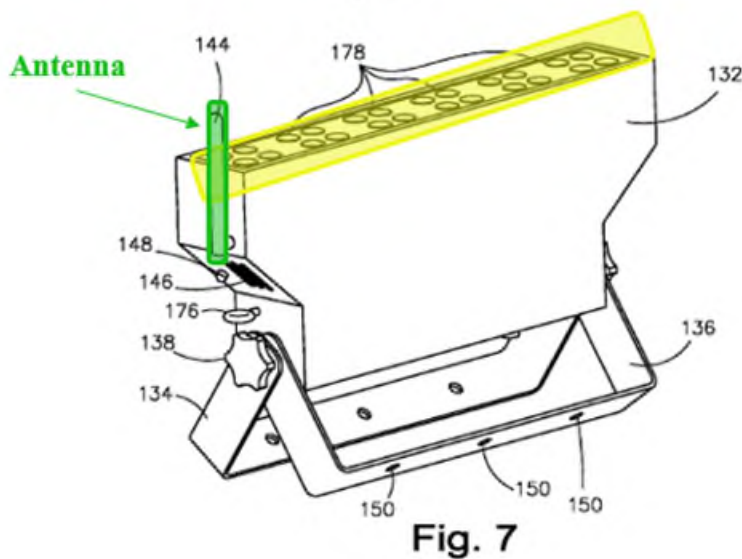
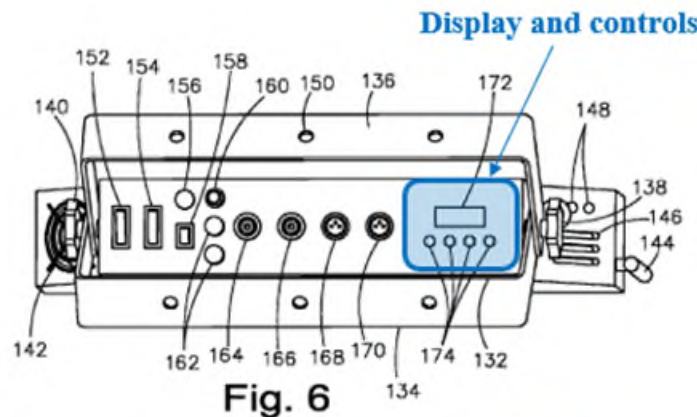
A POSITA would have a reasonable expectation of success, and such would have been a simple substitution, as the cool and warm white LEDs of Choong would continue to perform their same function: white light at a particular desired temperature. Ex. 1003, ¶¶ 167-171. Applying the teachings of Choong to the Showline Manual’s LED array would have involved replacing one known technique of producing white light with another to yield a predictable result (controlled white light output in the range from 2500K to 7000K). *Id.*

X. GROUND IV: THE SHOWLINE MANUAL IN VIEW OF REINOSO RENDERS OBVIOUS CLAIM 15

Claim 15 would have been obvious to a POSITA based on Showline Manual in view of Reinoso. Ex. 1003, ¶¶ 172-173. Showline Manual discloses wired communication interfaces on the SL PAR units to communicate with other SL PAR

units. See Section VII.J. The interface on the SL PAR unit includes connections for wired DMX cables, including “DMX512/RDM” input and output. Ex. 1004 at Fig. 5, 10, 24, Fig. 13.

Reinoso, in the same field of art, discloses that LED light fixtures can communicate over wired *or* wireless communication interfaces using the DMX protocol. Ex. 1007 at Abstract. Each Reinoso lighting module includes RGBW LEDs, electronic dimming, and LED display and function control buttons, and a master/slave synchronization mode. *Id.* at 3:3-28, 5:21-31. The Reinoso lighting modules further comprise a “[b]uilt in receiver/transmitter for wireless DMX operation,” and can communicate via this receiver/transmitter using the wireless DMX protocol. *Id.* at 3:3-28, 6:39-65.



Id. at Figs. 6, 7 (annotated).

It would have been obvious to a POSITA to use the wireless DMX512 interfaces and protocol, disclosed in Reinoso, with Showline Manual. Ex. 1003, ¶¶ 174-177. This would allow for extended communication of signals, without the need to run extensive lengths of cables in areas that may not be readily accessible, and to reduce the risk of communication faults caused by damaged cables. Ex. 1007 at 4:36-54; Ex. 1003, ¶¶ 178-179. Reinoso discloses that the same DMX512 protocol

standard can be used to implement the wireless communications between LED lighting devices. Ex. 1007 at 3:3-28, 3:54-4:66. A POSITA would have expected using a wireless, as opposed to wired, communications interface to implement the same DMX communications standard would yield predictable results. Ex. 1003, ¶ 180. Also, changing from a wired interface to a wireless interface would merely be substituting one known communication method for another, as the same DMX512 protocol would simply be transmitted wirelessly through antennas, as shown in Reinoso, as opposed to through cables, as shown in Showline Manual. Ex. 1003, ¶ 181.

XI. GROUND V: POHLERT ANTICIPATES CLAIMS 1-22

A. Claim 1

Pohlert discloses each limitation of Claim 1. Ex. 1003, ¶¶ 182-184.

Claim 1[pre]

Pohlert discloses a lighting system having LED “light panels” controlled by a “power controller,” with a user interface to select and modify lighting special effects, such as patterns of strobing, flashing, and dimming and brightening the lights. Ex. 1008 at Abstract, [0020], [0050], [0063], [0067]; Ex. 1003, ¶¶ 185-186. The system “may provide a variety of lighting patterns, including programmable patterns by which individual or groups of lights can be controlled for different lighting effects.”

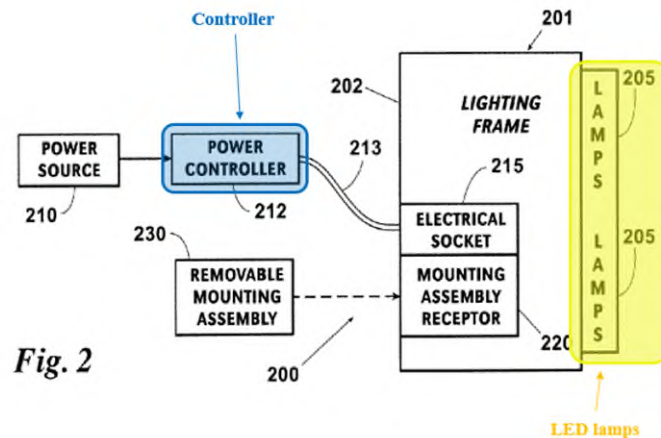
Id. at [0103]. It can be used to provide light “during video photography.” *Id.* at [0020]; Figs. 1, 3A-3B.

Claim 1[a]

Pohlert includes “a light panel having a panel frame, and a plurality of LEDs or other light elements secured to the panel frame.” Ex. 1008 at Abstract; Ex. 1003, ¶¶ 187-188. Its “lighting effects system” comprises “an arrangement of lamp elements on a panel or frame,” and that the “lamp elements may be embodied as low power lights such as light emitting diodes (LEDs) or light emitting electrochemical cells (LECs), for example, and may be arranged on the panel or frame in a pattern so as to provide relatively even, dispersive light.” *Id.* at [0050]. The LED lamps are “lighting devices” that provide desired lighting effects, such as a “flash or strobe.” *Id.* at [0020]-[0021], [0050]-[0053], [0057], Figs. 1, 3A-B.

Claim 1[b]

The LED lamps in Pohlert are “controlled by a power controller 212.” Ex. 1008 at [0057]; Ex. 1003, ¶¶ 189-197. Figures 5A, 5B show two examples of controllers. *Id.* at [0058]-[0067], Figs. 5A-5B.



Id. at Fig. 2 (annotated).

The power controller sends signals to the lighting elements to produce special effects that can be captured by a “motion picture-type camera.” *Id.* at [0052], [0057]-[0059]. Through the controller’s user interface, a user can select from a range of effects, including patterns of strobing, flashing, and dimming and brightening the light elements. *Id.* at [0059]-[0061]. These selections are converted into control signals sent to the LEDs. *Id.* at [0057]-[0059], [0061], [0063], [0067]; Figs. 2, 5A-5B. A user can “customize” the effects by selecting different combinations of patterns or adjusting the controls and parameters for dimming or brightening individual or groups of LEDs. *Id.* at [0061]-[0063], [0067].

Claim 1[c]

The “power controllers” in Pohlert include a user interface, enabling a user to choose combinations of special effects, including patterns, strobing, flashing,

dimming and brightening, and adjust parameters for special effects. Ex. 1008 at [0059], [0066], Figs. 5A, 5B; Ex. 1003, ¶¶ 198-200.

In Figure 5A, the controller includes multiple input mechanisms including switch controls, effects selector, knob, and buttons. *Id.* at [0059], Fig. 5A. Selections are sent to an “effects generator 543,” which generates or “create[s] various lighting effects, such as, e.g., dimming, strobing, pulsation, or pattern generation.” *Id.* at [0061]. The effects selector in the user interface allows a user to adjust frequency of the “[s]trob[ing]” effect (a lighting parameter) “via a manual knob, switch or other selection means.” *Id.* at [0062]. The controller can accomplish the selected “[p]attern generation” by “manual selection from a number of predefined patterns, or else through an interface allowing different pattern sequencing.” *Id.* at [0063].

A user can select “strobing or flashing different groups of light segments...in a predefined sequence (which may be a pseudo-random sequence, if desired), strobing or flashing different light elements 320 of the light segments 325-360 in a predefined (or pseudo-random) sequence, gradually dimming or brightening light segments 325-360 (individually, in groups, or collectively), or various combinations of these effects.” *Id.* at [0063], [0067]. The pseudo-random sequence is generated through a calculation by the effect generator. Ex. 1003, ¶¶ 201-204.

The controller in Figure 5B includes “[a]n interface 580...for programming or otherwise interfacing with the processor 574, or manually selecting various lighting effects options through selectable knobs, switches or other selection means, as generally explained previously with respect to FIG. 5A.” Ex. 1008 at [0066], Fig. 5B.

Selections made through this interface are converted to instructions for the processor that “provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation, for example.” *Id.* at [0067].

Claim 1[d]

An “effects selector” and “effects generator” (Figure 5A) or “processor” (Figure 5B) in the “power controller” calculates time varying lighting values, in the form of data signals characterizing the desired lighting effect, which are converted to power control signals supplied to the LEDs to generate and create light output. Ex. 1008 at [0059], [0061]-[0062], [0065]-[0067]; Ex. 1003, ¶¶ 205-206. These power control signals provide time-varying signals for “controlling the intensities” of the LEDs to generate the desired patterns and effects. Ex. 1008 at [0050]-[0051], [0059]-[0067]. Power control signals are based on user-selected parameters for the desired lighting effects, including brightness (or dimming), duration, frequency, whether a sequence will be pseudo-random, and color. *Id.* at [0051], [0061]-[0063], [0066]-[0067], [0089]-0091]. Just like the ’258 Patent, each of these controllers

receives user inputs for desired effects, determines (*i.e.*, “calculates”) lighting values reflecting the user selections, and sends these lighting values to LEDs to produce the effects, dynamically. Ex. 1003, ¶¶ 207-208.

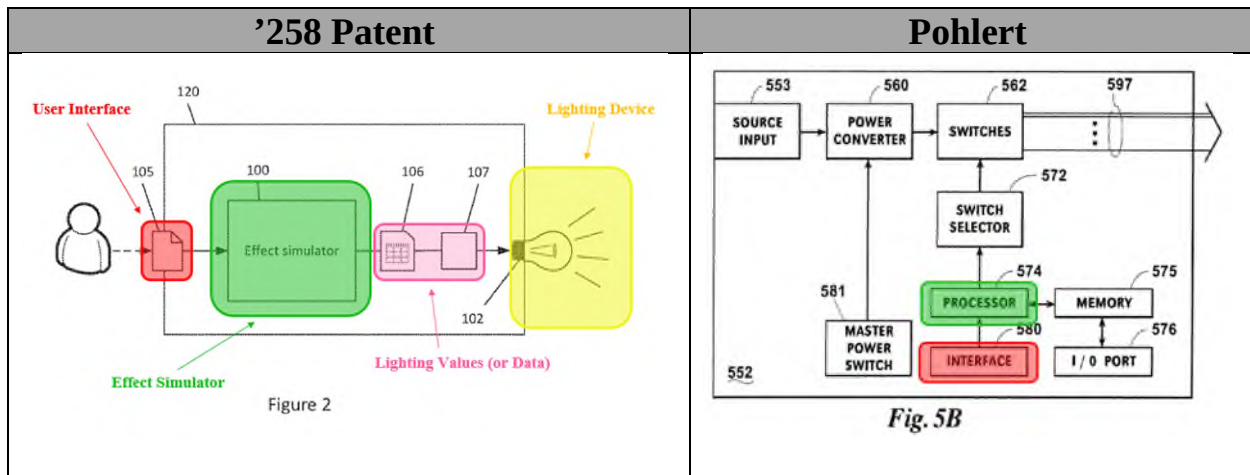
A user may select a strobing effect, implemented by the controller generating an oscillating signal (which is a time varying signal) and applying it as a control signal to control the intensities of the LEDs. Ex. 1003, ¶¶ 208-209; Ex. 1008 at [0062]. A user can adjust the frequency parameter of the strobing effect “via a manual knob, switch, or other selection means as part of the effects selector 533” in the user interface. *Id.* at [0062]. Adjusting the oscillation frequency parameter causes the controller to calculate and create a new output time varying power control signal, changing the frequency of the strobe effect output by the LEDs. Ex. 1003, ¶¶ 209-210. The pattern effects are generated *after* a user makes selections for the combinations of effects and sequences that will form the pattern; they do not exist before this. Ex. 1008 at [0063], [0067]. To generate these patterns after user selections, a calculation is performed. Ex. 1003, ¶ 210.

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. Ex. 1003, ¶ 211; Ex. 1008 at [0063], [0067]. The brightness and frequency of these light effects are customized by user-selected parameters,

including the brightness and dimming of different groups of light elements during the pattern and whether the sequences will be pseudo-random. Ex. 1008 at [0063], [0067].

To adjust the color of the LEDs, users input “intensity control” and “ratio control” parameter adjustments through “manual control knobs, dials, switches, or other such means, or alternatively may be embodied as a digital keypad, a set of digital buttons, or the like” on a user interface. *Id.* at [0088], [0089]-[0092]. The “intensity control” and “ratio control” adjustments are received by “intensity control circuits” and “ratio control circuits” in the controller, which then calculates and generates signals to modify the power supply to the different LEDs to generate the desired color and color temperature. *Id.* at [0089]-[0091]. The pseudo-random sequences generated by the effect simulator (Ex. 1008 at [0063], [0067]) is a sequence of preset values and calculations are performed to generate values for the “pseudo-random” sequence. Ex. 1003, ¶¶ 212-214; Ex. 1010 at 353:15-16, 357:1-22, 360:17-363:20 (“an algorithm is used” to generate pseudo-random numbers).

The generation and output of control signals, or time varying lighting values, representing the desired effect, as disclosed in Pohlert, is the same as the effect simulator and output lighting values disclosed in the ’258 Patent:



Ex. 1001 at Fig. 2 (annotated), Ex. 1008 at Figs. 5B (annotated), 5A.

Claim 1[e]

The “simulation parameters” in Pohlert depend on the user-selected customizable lighting effects selected through the user interface on the power controller. See Section XI.A (Claims 1[c]-1[d]); Ex. 1003, ¶¶ 215-216. Pohlert discloses “strobing” and light pattern effects used in “photography, film, television.” Ex. 1008 at [0003], [0005], [0061]. The simulation parameter related to the “frequency” of an oscillation signal depends on the user selecting to simulate a “strobing” effect. *Id.* at [0061]-[0063], [0066]-[0067]. The adjustment parameter for the “frequency” of strobing is related to a user selecting to produce a strobing effect. Ex. 1003, ¶ 216.

Simulation parameters of dimming or brightening different groups of light elements, and selecting whether the sequences used to generate light patterns will be

pseudo-random, depend on a user selecting to generate a pattern effect on the user interface. Ex. 1008 at [0063], [0067].

Claim 1[f]

Pohlert’s “power controller” sends control signals through wires supplying power to light elements, causing the light elements to simulate the user’s selected effect. See Section XI.A (Claims 1[b]-1[d]); Ex. 1003, ¶¶ 217-218. The output from the “effects selector” and “effects generator” or “processor,” and switches, in the controllers shown in Figures 5A-5B are provided to the LED lamps through a cable or wires. Ex. 1008 at [0058]-[0059].

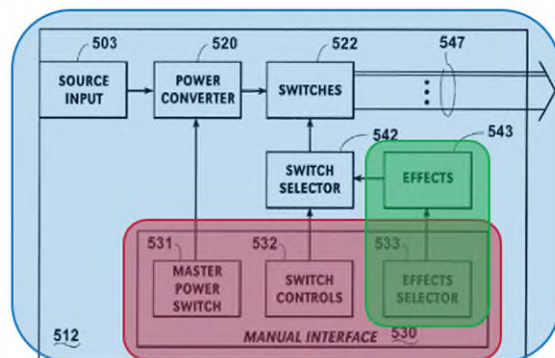


Fig. 5A

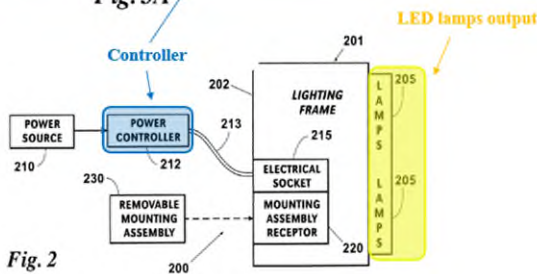
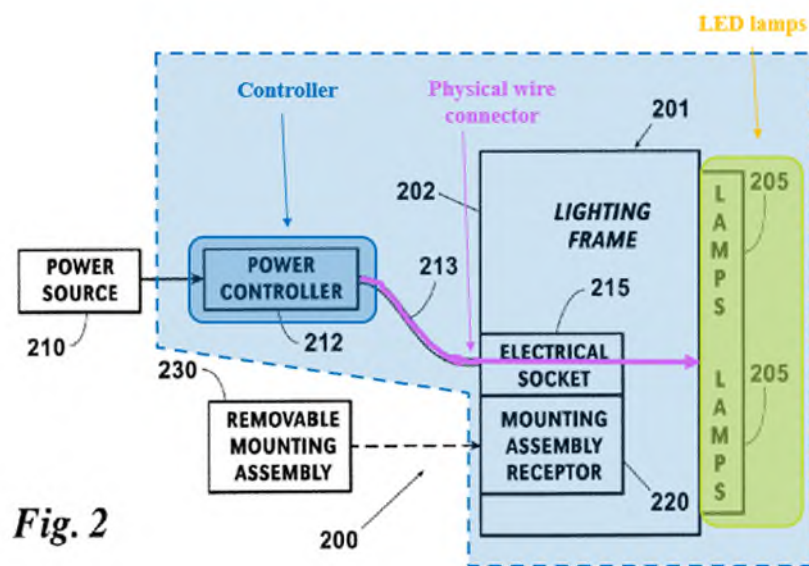


Fig. 2

Id. at Figs. 2, 5A, 5B.

Claim 1[g]

A power controller and LED lamps in Pohlert are physically connected and combined into one device. Ex. 1008 at [0020], [0050]-[0051]; Ex. 1003, ¶¶ 219-221. The “power controller” can be physically connected by a cable to the lighting elements on the lighting frame, making them one combined unit:



Id. at Fig. 2 (annotated).

The “power source 210” in Figure 2 may be either “a standard electrical outlet” or “a battery having sufficient current to drive the LEDs.” *Id.* at [0057]. Where a battery is used, “the light panel and self-contained battery unit function as an integrated lighting apparatus.” *Id.* at [0018]. Figures 3A-3B show the lighting system may be a standalone unit mounted to a video or photography camera. *Id.* at Figs. 3A, 3B, [0094].

Pohlert discloses that the LEDs and controller may be mounted to a camera or a frame, and “provided in the form of a kit, with one or more of a light panel, self-contained battery unit, compact stand, connecting cable(s), adapter(s), lenses or color gels, and so on, being provided in a single package to allow flexibility and versatility to users in the field.” *Id.* at [0024], [0050].

B. Claim 2

A user can input selections through Pohlert’s interface in the “power controller” to customize effects, including patterns, strobing, flashing, dimming, brightening, and combinations thereof. *See* Section XI.A (Claims 1[c]-1[d]); Ex. 1003, ¶¶ 222-223. As for strobing, Pohlert discloses that it “may be accomplished by generating an oscillating signal and applying it as a control signal either upstream or downstream from the switch selector 542,” with the frequency of oscillation being “selectable via a manual knob, switch or other selection means as part of the effects selector 533.” Ex. 1008 at [0062]; Ex. 1003, ¶ 224. User inputs to change the oscillation frequency allow customization of the strobing effect, with a higher oscillation frequency causing more frequent flashes. Ex. 1003, ¶ 224.

As different groups of light elements may contain differing numbers of lights turning randomly on and off, each activated light grouping has a different, random peak brightness. Ex. 1003, ¶¶ 223-224. Different combinations of lights may be selected, and the total light output would change depending on which groups are

selected. Ex. 1008 at [0059]. In pseudo-random sequences, when all light segments are selected, there would be 100% total light output (*i.e.*, brightness). *Id.* This maximum light output decreases to 50% if every other light segment is randomly selected and to 25% if every fourth light segment is randomly selected. *Id.* at [0059], [0063], [0067]. Depending on how many light segments are activated based on the pseudo-random sequence, the peak brightness generated randomly changes. *Id.*

C. Claims 3, 4, and 5

Pohlert includes multiple LEDs, such as the plurality of lamp segments 320 in Figures 3A-3B, these LEDs can be “red, green, and blue.” Ex. 1008 at [0081], [0084], Figs. 3A, 3B; Ex. 1003, ¶¶ 225-226. Pohlert teaches that its lamp elements comprise “high output LEDs” that “are available in white as well as colors such as green, blue, red, amber, and cyan.” Ex. 1008 at [0111]. This discloses the RGB+W LED of Claim 5. Ex. 1003, ¶¶ 226-227.

D. Claim 6

Pohlert discloses that with its lighting system, selective combinations of RGB LEDs can be used to “generate virtually any desired color.” Ex. 1008 at [0084]; Ex. 1003 ¶¶ 228-229. Pohlert discloses control of “color temperature,” and refers to color temperatures of “tungsten” for light in the range of 3200° Kelvin and “daylight” for temperatures in the range of 4200-9500° Kelvin. *Id.* at [0049].

To adjust the color or temperature of LEDs, users input “intensity control” and “ratio control” adjustments through “manual control knobs, dials, switches, or other such means, or alternatively may be embodied as a digital keypad, a set of digital buttons, or the like” on a user interface. *Id.* at [0088], [0089]-[0092]. The “intensity control” and “ratio control” adjustments are received by “intensity control circuits” and “ratio control circuits” in the controller, that which then modifies the power supply to the different LEDs to generate the desired color and color temperature. *Id.* at [0089], [0090]-[0091]; Ex. 1003, ¶ 230.

E. Claim 7

Pohlert’s lighting system can use “tungsten” and “daylight” LEDs, which have color temperatures in the ranges of 2000-4200 Kelvin and 4200- 9500 Kelvin, overlapping with the description of “warm” and “cool” white LEDs in the ’258 Patent. *See* Section XI.D (Claim 6); Ex. 1003, ¶¶ 231-232. A POSITA would understand that the “tungsten” temperature range produces a “warm” white light, and the daylight temperature range produces a “cool” white light. Ex. 1003, ¶ 232.

F. Claim 8

Pohlert’s lighting system can include LEDs that, individually or in combination, can be controlled to produce light spanning the tungsten color temperature range (“1000° Kelvin to about 4200° Kelvin”) and daylight color temperature range (“4200° Kelvin to about 9500° Kelvin”) (Ex. 1008 at [0049]),

thus covering an overall color temperature range between 1000-9500° Kelvin. *See* Section XI.D (Claim 6); Ex. 1003, ¶¶ 233-234.

G. Claim 9

Pohlert's user interface can be used to generate different patterns or effects. *See* Section XI.A (Claim 1[d]); Ex. 1003, ¶¶ 235-236. Pohlert teaches that effects generated by the “power controller” can include “gradually dimming or brightening” the LED elements—*i.e.*, controlling their brightness. Ex. 1008 at [0063], [0067], [0050].

H. Claim 10

Pohlert discloses that the user-selectable simulation parameters include color and color temperature. *See* Section XI.D, F (Claims 6, 8); Ex. 1003, ¶¶ 237-238. A user can select to control the color and color temperature of the LED elements in the lighting system, thereby simulating various color effects, such as an open blue sky or a particular time of day. Ex. 1008 at [0087]. Through “intensity control” and “ratio control” adjustments using “manual control knobs, dials, switches, or other such means, or alternatively may be embodied as a digital keypad, a set of digital buttons, or the like” on the user interface, the user can control the intensities of different color LEDs to control the color output. *Id.* at [0088], [0089]-[0092].

I. Claim 11

Pohlert's effects and patterns include "strobing or flashing different groups of light segments...in a predefined sequence (which may be a pseudorandom sequence, if desired), strobing or flashing different light elements 320 of the light segments 325-360 in a predefined (or pseudo-random) sequence, gradually dimming or brightening light segments 325-360 (individually, in groups, or collectively), or various combinations of these effects." Ex. 1008 at [0063], [0062], [0067]; Ex. 1003, ¶¶ 239-240. Pohlert discloses a flashes (strobe) effect. Ex. 1003, ¶¶ 241-242.

A POSITA would understand that the pattern generation and sequences disclosed in Pohlert (Ex. 1008 at [0063], [0067], [0081]) can produce additional effects, such as those that mimic lightning, welding, and sparking. Ex. 1003, ¶¶ 241-242.

J. Claims 12 and 21

Pohlert discloses a memory that stores programming instructions, which comprise the "simulation parameters" for the varying power control signals to the LED elements to implement the user-selected effects. Ex. 1008 at [0066]-[0067]; Ex. 1003, ¶¶ 243-245. Pohlert discloses that the processor in the Figure 5B "power controller" interfaces with a memory, and "reads instructions from the memory 575 and executes them in a conventional manner. The instructions will cause the processor 574 to control the switch selector by, e.g., setting various digital values in

registers whose outputs control the switches 562. The programming instructions may also provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation, for example.” *Id.* at [0067], Fig. 5B.

K. Claim 13

The controller disclosed in Pohlert can control a plurality of groups of LEDs included in one or more light panels. A plurality of LEDs may be included as lamp elements in an “arrangement” on a panel or frame, and the power controller controls “the intensities of the various lamp elements, either collectively, individually, or in designated groups, and, in some embodiments, through pre-programmed patterns.” Ex. 1008 at [0050], [0053], [0059], [0067], Figs. 1, 3A-3B; Ex. 1003, ¶¶ 246-247.

Pohlert’s lighting system may include “multiple panel light sections 123, 124” (*id.* at [0053]), and as shown in Figures 3A-3B, the lighting arrangements are controlled by the controller to produce effects using multiple light segments. *Id.* at [0059]. The Figure 5B controller “may be programmed to turn the switches 562 on and off according to a predesignated pattern dictated by the programming instructions.... As mentioned before, patterns may include, for example, strobing or flashing all or different groups of light segments 325-360 (given the example of FIG. 3) in a predefined (or pseudo-random) sequence, strobing or flashing different low power lamps 320 of the light segments 325-360 in a predefined (or pseudo-random) sequence, gradually dimming or brightening the light segments 325-360

(individually, in groups, or collectively), or various combinations of these effects is contemplated.” *Id.* at [0067].

Pohlert also discloses “slave flashes” that can be controlled by radio frequency, infrared, and optical signals (including flashes from the LEDs controlled by the controller). *Id.* at [0022]-[0023]. Pohlert discloses that these may be “optical slave flashes” that are “triggered by light,” including light pulses from another device. *Id.* at [0023]. Its lighting and effect generation system is “particularly suited for use with such” optical slave flashes. *Id.* When an optical slave flash is used with the Pohlert lighting system, the “power controller” in the lighting system would cause the LEDs to produce the light pulse that then triggers the optical slave flashes. Ex. 1003, ¶¶ 248-250. Each of these slave flashes are also a “lighting device” triggered by the LEDs controlled by the controller to produce desired lighting effects. *Id.*

L. Claim 14

Pohlert discloses a plurality of light elements, such as different panels of lights in a frame or individually controllable rows of lights, controlled based on the power control signals resulting from user input of desired combinations of effects. Section XI.L (Claims 1[c], 1[f]); Ex. 1003, ¶¶ 251-252. Certain of these panels are not directly connected to the controller, but are connected to each other through cables, with only one panel connected to the controller. Ex. 1008 at [0113]. At

least the panels not directly connected to the controller included with the battery power supply are separate from the controller. Ex. 1003, ¶ 252.

A POSITA would understand that, when using multiple light panels, they should be connected with the “power jumper cables” that connect “the power between the panel(s) 702 and battery unit(s).” Ex. 1008 at [0113]; Ex. 1003, ¶ 252. Any panel connected to another panel through a power jumper cable is only indirectly connected to the power controller, and therefore is “separate” from the power controller. Ex. 1008 at [0113].

Pohlert also discloses that “optical slave flashes” separate from the controller can be triggered through light pulses, including those produced by the LED light elements operated by the controller. See Section XI.K (Claim 13). Each of these “optical slave flashes” are “separate” from the controller, as they are “self-contained electronic flash units” that respond to external triggers, including in IR, RF, and optical signals. Ex. 1003, ¶ 253.

M. Claim 15

Pohlert discloses that the Figure 5B controller includes an “I/O port” that may be wireless (infrared) for obtaining digital information. Ex. 1008 at [0066]; Ex. 1003, ¶¶ 254-255. Pohlert further discloses that “slave flashes” can be controlled by RF, infrared (IR), or optical signals (such as the flashes generated by the LEDs directly connected to the controller). *Id.* at [0022]. Pohlert’s lighting effects and generation

system, which includes the power controllers, is “particularly suited for use with such optical, IR or RF slave flash systems.” *Id.* at [0023].

A POSITA would have understood that the Figure 5B power controller in Pohlert’s lighting system, having an IR “I/O port,” could generate the exact IR signals Pohlert mentions can be used to trigger the external slave flash units. Ex. 1003, ¶ 256. A POSITA would have understood that the I/O port could both receive (input) and generate (output) IR signals, and would have been motivated to use the wireless IR I/O port in the power controller to communicate with the slave flashes, so that a user could coordinate and control all lights being used from one controller. Ex. 1008 at Fig. 5B; Ex. 1003, ¶ 256.

N. Claim 16

Pohlert discloses that its “power controller” can individually control groups of light elements to generate selected predetermined patterns. Ex. 1008 at [0063], [0067]; Ex. 1003, ¶¶ 257-258. Pohlert discloses strobing or flashing all or different groups of its light elements in sequences, which would encompass “offsetting” the lights (flashing them at different times in sequences) and “overlapping” the lights (flashing groups or elements together, or in sequences where different groups are “on” for some of the same time). Ex. 1003, ¶ 258. Pohlert discloses “strobing or flashing different groups of light segments...in a predefined sequence (which may be a pseudo-random sequence, if desired), strobing or flashing different light

elements 320 of the light segments 325-360 in a predefined (or pseudo-random) sequence, gradually dimming or brightening light segments 325-360 (individually, in groups, or collectively), or various combinations of these effects.” Ex. 1008 at [0063], [0067].

By strobing, flashing, or gradually dimming or brightening the different groups of light elements as described, the generated effect would be one of a moving light. Ex. 1003, ¶ 259. For example, strobing the rows of LEDs shown in Figures 3A and 3B in sequence from the top to the bottom would create an effect of a light source moving downward. *Id.*; Ex. 1008 at Figs. 3A-3B, [0063], [0067]. Strobing different light segments in sequence would create the effect of a light moving in position from where the flashes originate. Ex. 1003, ¶ 259. Gradually dimming or brightening the light segments individually or in groups would create the effect a light source that is moving from the dim to the brighter LED positions, simulating a light coming closer or moving farther away. *Id.*

O. Claim 17

The power controller in Pohlert is connected to the lighting frame containing the LED lamps by a cable 213. Ex. 1008 at [0058]; Ex. 1003, ¶¶ 260-261. The cable is “for connection” of the power controller “to the lighting frame.” *Id.* The power controller is “separable” from the lighting device when the cable is disconnected from the electrical socket 215. Ex. 1003, ¶ 261; Ex. 1008 at Fig. 2.

P. Claim 18

Pohlert's user interface in the Figure 5A and 5B controllers can include dials, control panels, and buttons. See Section XI.A (Claim 1[c]); Ex. 1003, ¶¶ 262-263.

Q. Claim 19

Pohlert discloses “switches” and a “switch selector” that convert signals from the power controller into control signals provided to the lighting elements to change the output brightness, and further discloses “intensity control circuits” and “ratio control circuits” that convert signals representing desired colors to signals that are sent to the LEDs for generating such colors. See Section XI.A, D (Claims 1[f] (switches and switch selector), 6 (intensity and ratio control circuits)); Ex. 1003, ¶¶ 264-265.

In the Figure 5A controller, the “switch selector 542 would...convert each knob setting to a set of control signals to the appropriate switches 522, which in turn would control power to the wires 547 supplying power to the light segments.” Ex. 1008 at [0059]. The Figure 5B controller similarly “includes a set of switches 562 receiving power from the power converter 560, and providing power to individual wires 597 which are conveyed, preferably by cable, to the lighting frame assembly 201 of the lighting effects system 200. The power controller 552 also includes a switch selector 572, which may comprise, for example, a set of registers which

provide digital signals to the switches 562 to control their on/off state.” *Id.* at [0065], Figs. 5A, 5B.

Control of the switches provides for the “pattern generation” to produce effects, such as changes in brightness. *Id.* at [0063], [0066]-[0067]; Ex. 1003, ¶¶ 266-269. Pohlert discloses “programming instructions may provide that the switches 562 are turned on and off according to designated sequences, thus allowing the capability of pattern generation via the processor 574. As mentioned before, patterns may include, for example...gradually dimming or brightening the light segments 325-360 (individually, in groups, or collectively).” Ex. 1008 at [0067].

With respect to color signals, as discussed above with respect to Claims 6 and 8, Pohlert discloses intensity control circuits and ratio control circuits that modify the power supply to each LED to generate the desired light. *Id.* at [0089]-[0091]. The intensity and ratio control circuits convert signals representing the desired colors and color temperatures into power control signals sent to the LEDs to output the appropriate light. *Id.*

R. Claim 20

Pohlert’s lighting system is used for “photography, film, television.” Ex. 1008 at [0003], [0005]. Figure 1 illustrates the use of Pohlert’s lighting and effects generation system with a video camera. *Id.* at [0052]; Fig. 1; Ex. 1003, ¶¶ 270-272.

S. Claim 22

A plurality of light elements in Pohlert, such as different panels of lights in a frame or individually controllable rows of lights, can be controlled based on the output power control signals resulting from user input of desired combinations of effects. *See* Section XI.L (Claim 14); Ex. 1003, ¶¶ 273-274.

XII. GROUND VI: POHLERT RENDERS OBVIOUS CLAIMS 1-22

To the extent Pohlert does not anticipate Claims 1-22, Claims 1-22 would have been obvious to a POSITA based on Pohlert.

A. Claims 1-22

As explained in Sections XI, Claims 1-22 are disclosed in Pohlert. These claims would have been obvious to a POSITA.

B. Claim Limitation 1[d] Would Have Been Obvious to a POSITA Based on Pohlert

If the Board finds that Claim limitation 1[d] is not disclosed in Pohlert, Petitioner asserts that it would have been obvious to a POSITA. As explained in Section XI.A, Pohlert teaches the “calculating” limitation. If Patent Owner argues that Pohlert generates lighting effects without performing a “calculation,” then, at a minimum, this limitation would have been obvious to a POSITA.

A POSITA would understand that Pohlert’s “effect generator 543” of Figure 5A or “processor 574” of Figure 5B must generate effects by doing “calculations” (or data creation). Just like the ’258 Patent, inputs received through manual or digital

interfaces in Pohlert are used by either the effects generator 534 or processor 574 to calculate time varying data signals representing the desired effect. Ex. 1008 at [0059]-[0067].

Additionally, a POSITA would understand that a “calculation” is needed for Pohlert’s “strobing” effect. Ex. 1003, ¶¶ 275-279. Users can adjust oscillator frequency for the strobing effect by, for example, adjusting a knob or switch. When these adjustments are made, the controllers calculate new oscillating signals changing the frequency of the strobing. Ex. 1003, ¶ 280. Whether “conventional electronic components” or a “conventional” computer program implements changes to oscillation frequency does not negate that some calculation was performed to arrive at the adjusted oscillating frequency. Ex. 1003, ¶¶ 281-282.

C. Claim 7 Would Have Been Obvious to a POSITA Based on Pohlert

To the extent Claim 7 is found not to be expressly disclosed in Pohlert, Claim 7 would have been obvious to a POSITA. Pohlert’s lighting system can use “tungsten” and “daylight” LEDs, which, respectively, have color temperature in the ranges of 2000-4200 Kelvin and 4200- 9500 Kelvin, overlapping with the description of “warm” and “cool” white LEDs in the ’258 Patent. *See* Section XI.D (Claim 6). A POSITA would understand that the “tungsten” temperature range

produces a “warm” white light, and the daylight temperature range produces a “cool” white light. Ex. 1003, ¶ 283.

XIII. DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE

Denial under 35 U.S.C. §§ 325(d) or 314(a) is not warranted because the invalidity positions presented in this Petition are neither cumulative nor redundant of the grounds set forth during the prosecution of the '258 Patent.

The Examiner did not consider the prior art combinations relied on in this Petition, nor did the Examiner consider the invalidity positions presented in this Petition. The Examiner also did not have the benefit of the expert declaration presented in this Petition. *Group III International, Inc. v. Targus Group International, Inc.*, IPR2021-00371, No. 21 at 33 (P.T.A.B. Jul. 9, 2021); *Intel Corporation v. Koninklijke Philips N.V.*, IPR2021-00370, No. 10, at 9 (P.T.A.B. Jul. 6, 2021).

While the same invalidity positions were previously presented to the Board by ARRI in IPR2021-01496, ***the Board instituted review based on these positions finding a likelihood of success on the merits.*** Ex. 1009 at 18. There is no basis for discretionary denial as the Board has not previously found these arguments unpersuasive.

There is also no basis for discretionary denial under *Fintiv*. While there is a co-pending litigation (*Rotolight Limited v. Videndum PLC, et al.*, Case No. 22-928-

MN-JLH) that proceeding is at a very early stage. The six *Fintiv* factors weigh against denial. The litigation is not stayed and there is no scheduling order or trial date set. Neither the parties nor Court have invested significant resources, and no discovery has taken place. Additionally, the merits of this Petition are very strong and counsel against a *Fintiv* denial.

Regardless, Petitioner has agreed to a *Sotera*-type stipulation. See Exhibit 1014.

XIV. MANDATORY NOTICES

Videndum hereby submits these Mandatory Notices in accordance with 37 C.F.R. § 42.8 *et seq.*

A. Real Party-in-Interest (37 C.F.R. § 42.8(b)(1))

The real parties-in-interest are Petitioner Videndum Production Solutions, Inc., located at 14 Progress Dr., Shelton, Connecticut; and Videndum PLC, located Bridge House, Heron Square, Richmond TW9 1EN, United Kingdom.

B. Notice of Related Matters (37 C.F.R. § 42.8(b)(2))

ARRI previously filed *inter partes* review petitions against the '258 Patent in IPR2021-01496. This IPR was instituted based on the same prior art presented in this Petition. ARRI and Patent Owner reached a confidential settlement agreement, and the Board terminated the IPR proceeding shortly before issuing a Final Written Decision.

Pending before the United States District Court for the District of Delaware is *Rotolight Limited v. Videndum PLC and Videndum Product Solutions, Inc.*, Case No. 22-928-MN-JLH, in which Rotolight has asserted infringement of the '258 Patent against Petitioner.

C. Designation of Lead and Back-Up Counsel and Service Information (37 C.F.R. § 42.8(b)(3) and (4))

Petitioner hereby identifies lead counsel as David M. Magee (Reg. No. 51,982), who can be reached at Armstrong Teasdale LLP, 800 Boylston St., 30th Floor, Boston, Massachusetts 02199, via e-mail at dmagee@atllp.com, telephone at 617.824.5131, and via fax at 617.830.8490. Backup counsel are: (1) Marc Vander Tuig (Reg. No. 57,964), who can be reached at Armstrong Teasdale LLP, 7700 Forsyth Blvd., Suite 1800, St. Louis, Missouri 63105, via email at mvandertuig@atllp.com, via telephone at 314.621.5070, and via fax at 314.621.5065; and (2) Kyle G. Gottuso (*pro hac vice* forthcoming), Armstrong Teasdale LLP, 7700 Forsyth Blvd., Suite 1800, St. Louis, Missouri 63105, kgottuso@atllp.com, via telephone at 314-342-4131, and via fax at 314.621.5065. A Power of Attorney is filed concurrently herewith.

Petitioner consents to electronic service to lead and backup counsel, using the email addresses above.

XV. REQUIREMENTS FOR PETITION FOR *INTER PARTES* REVIEW

A. Grounds for Standing (37 C.F.R. § 42.104(a))

Petitioner certifies the '258 Patent is available for *inter partes* review, and that Petitioner is not barred or estopped from requesting an IPR of Claims 1-22 of the '258 Patent on the grounds identified herein.

B. Payment of Fees (37 C.F.R. § 42.15(a))

The required fees are submitted herewith. If additional fees are due, the Office is authorized to charge Deposit Account No. 012384.

C. Proof of Service (37 C.F.R. § 42.105)

Proof of service of this Petition on Patent Owner at the correspondence address of record for the '258 Patent is attached.

XVI. CONCLUSION

The prior art demonstrates that the Challenged Claims are directed to a well-known LED lighting system and lighting effect generator. There is a reasonable likelihood that these claims are unpatentable based on the grounds presented in this Petition. Petitioner requests that the Board institute trial and find Claims 1-22 of the '258 Patent unpatentable.

Dated: July 17, 2023

Respectfully submitted,

/David M. Magee/

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CERTIFICATE OF SERVICE

Under 37 C.F.R. § 42.6(e), the undersigned certifies that on July 17, 2023, a copy of the foregoing PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,197,258, Petitioner's Power of Attorney, and all associated exhibits were served in their entirety on the following counsel of record for Patent Owner via UPS Next Day Air:

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME
REQUIREMENTS UNDER 37 C.F.R. § 42.24**

Under 37 C.F.R. § 42.24(d), the undersigned certifies that the PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,197,258 complies with the type-volume requirements of 37 C.F.R. § 42.24(a)(1)(i) because it contains 13,697 words, excluding the parts of the Petition exempted by 37 C.F.R. § 42.24(a).

This Petition also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii) and (iv).

Dated: July 17, 2023

Respectfully submitted,

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