

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Arnold & Richter Cine Technik GmbH & Co. Betriebs KG,
Petitioner,

v.

Rotolight Limited,
Patent Owner.

Case (to be assigned)
Patent 10,197,258

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,197,258
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §42.100 *et seq.***

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I. INTRODUCTION

Petitioner Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (“**ARRI**”) challenges Claims 1-22 of U.S. Patent No. 10,197,258 (“’258”). The ’258 discloses and claims nothing more than a well-known lighting system with a light and a “controller.” The controller includes a basic user “input interface” that allows a user to select and customize special effects and a so-called “effect simulator” to produce the selected effects with the light. The light and the controller are integrated in a single unit.

None of this was new at the time of the alleged invention. Myriad prior art references disclose the basic elements of a lighting system that (1) accepts input commands from a user to select and customize a special effect, (2) converts those commands into data to produce the special effect on a light, and (3) produces the effect with the light. Nor was the notion that a light and “controller” could be integrated together something new; such was done long before the ’258.

The two primary references discussed herein, together with the Declaration of lighting expert Michael Wood,¹ underscore this. The first reference is a User Manual for a real-world lighting product, the Showline SL PAR 155 (the “**Showline Manual**”) (Ex. 1004). The Showline Manual discloses a luminaire that

¹ The Declaration of Michael Wood (the “**Wood Decl.**”) is Exhibit 1008.

allows a user to select, customize, and reproduce lighting effects, all through an interface and control panel integrated into the luminaire. The second reference, Pohlert,² is a published patent application that similarly discloses a “lighting and effects generation system,” with an integrated “power controller” that allows a user to select and customize lighting effects.

Neither the Showline Manual nor Pohlert nor was considered during prosecution of the '258.

II. MANDATORY NOTICES

A. Real Parties-in-Interest

The real party-in-interest in this proceeding is Arnold & Richter Cine Technik GmbH & Co. Betriebs KG.

B. Related Matters

The '258 is not the subject of any other proceedings. ARRI is filing other *inter partes* review petitions against U.S. Patent Nos. 10,197,257 and 10,203,101 contemporaneously with this petition. These related patents claim priority to the same parent application as the '258.

C. Counsel and Service Information

² “**Pohlert**” is U.S. Patent Application Publication No. 2012/0044374 (Ex. 1003).

Lead counsel is Joe Raffetto (Reg. 66,218). Backup counsel are Celine Crowson (Reg. 40,357) and Scott Hughes (Reg. 68,385). Service information is as follows:

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III. NOTICE OF FEES PAID

Fees are submitted herewith. If additional fees are due during the proceeding, the undersigned authorizes the Office to charge them to Deposit Account No. 50-1349.

IV. CERTIFICATION OF GROUNDS FOR STANDING

ARRI certifies that the '258 is available for *inter partes* review, and that ARRI is not barred or estopped from requesting this review.

V. PRECISE RELIEF REQUESTED

The relief requested is cancellation of the challenged claims, as follows:

Ground	References	Claims³	Basis
1a	Showline Manual	1-6, 8-14,	102 / 103

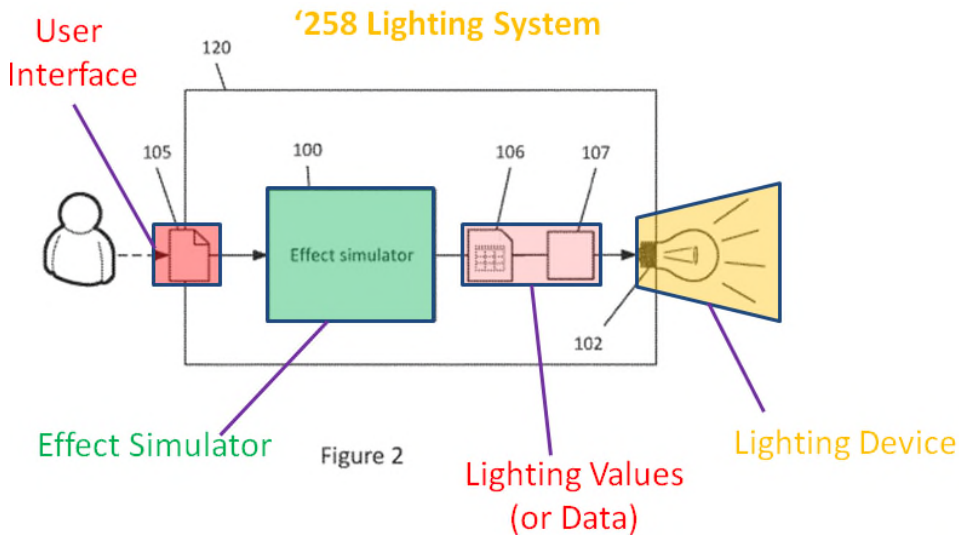
³ Independent claims in bold.

Ground	References	Claims ³	Basis
		16-22	
1b	Showline Manual in view of Choong	7	103
1c	Showline Manual in view of Reinoso	15	103
2	Pohlert	1-22	102 / 103

VI. THE '258

A. '258 Overview

Independent Claim 1 of the '258 recites a “lighting system” that includes a **“lighting device”** (*e.g.*, light) 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.” ('258, 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.*, Fig. 2 (annotated).)

Referring to annotated Figure 2 above, the '258 describes how a user can make selections of desired lighting effects on the user interface 105. (*Id.*, 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.*, 3:48-62; 6:47-7:16, 8:18-25; Fig. 6.) These simulation parameters may be random or user-selected, and are used by the “effect simulator” to calculate the data 106, or “time varying lighting values,” that characterize the effect and to produce the effect on the LEDs. (*Id.*, 7:29-46, 8:18-53.)

The “effect simulator” is the component of the controller that “creates data 106 characterising a lighting effect.” (*Id.*, 7:51-52; *see also id.*, 5:54-58, 8:41-50.) This data 106 is described as being “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. (*See e.g., id.*, 8:41-50.) The '258 describes how before this data is sent to the lighting device 102, to output light simulating the effect, it may be converted by a “converter,” which converts the data into a signal suitable for the particular light elements being controlled. (*Id.*, 8:41-53 (“[L]ighting data converter 107 may convert the data 106 from the lighting effect simulator 100 into a suitable signal for a particular light 102.”).) The lighting device 102 then outputs light simulating the desired effect, as customized by the user.

B. '258 File History

The '258 was filed December 21, 2017 and issued February 5, 2019. The '258 is a continuation of U.S. Application No. 15/481,460, and claims priority to U.S. Provisional No. 62/319,809, filed April 8, 2016. During examination, no rejections over prior art references were made. Further, in the Notice of Allowance, the Examiner simply indicated that “the prior art fails to teach or fairly suggest” elements of claim 1, including “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.” ('258 File History, Notice of Allowance Mailed September 26, 2018, pp. 2-3.)

VII. CLAIM CONSTRUCTION AND POSITA DEFINITION

A. Claim Construction

Claims in an *inter partes* review “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Unless indicated otherwise, all claim terms herein are given such ordinary and customary meaning.

B. Definition of a Person of Ordinary Skill in the Art

A person of ordinary skill in the art (“**POSITA**”) in the field of the ’258 would have had a good working knowledge of electrical engineering and entertainment lighting systems, controls, and effects. (Wood Decl., ¶ 36.) She would have gained this through an undergraduate Bachelor’s degree in electrical engineering, or a comparable field, as well as some experience in the field (*e.g.*, in entertainment lighting systems). (*Id.*) The more education one has, the less experience needed to attain an ordinary level of skill. (*Id.*) Similarly, more experience in the field may serve as a substitute for formal education. (*Id.*)

VIII. ANALYSIS OF GROUNDS FOR UNPATENTABILITY

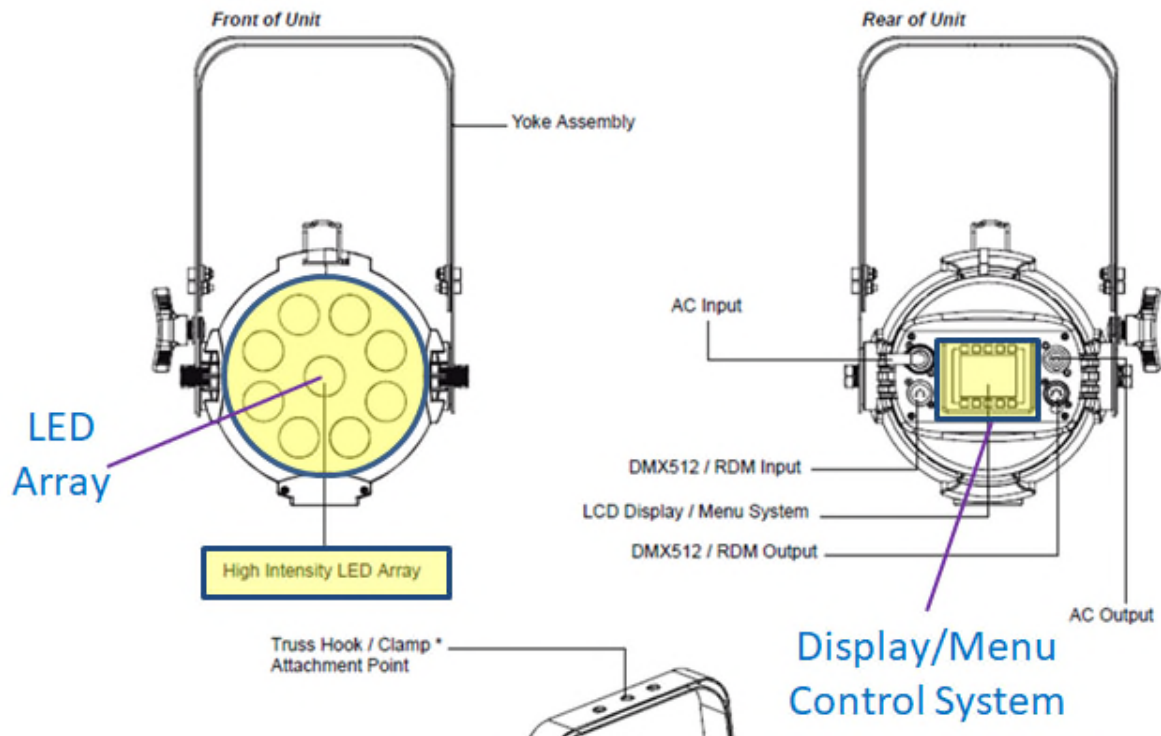
A. Grounds Based on the Showline Manual

Showline Manual describes a professional grade LED luminaire called the SL PAR 155 ZOOM RGBW LED Luminaire (“**SL PAR**”), used in entertainment, cinematography, and studio lighting systems. (Palmer Decl., ¶¶ 3-7;⁴ Wood Decl., ¶¶ 39-42.)

Showline Manual is prior art to the ’258 under at least 35 U.S.C. § 102(a)(1). The SL Par was first sold in late 2013. (Palmer Decl., ¶¶ 4-10; *see also* Wood Decl., ¶¶ 41-42.) The Showline Manual bears a date of December 10, 2013, and was made publicly available, including to distributors and purchasers of the SL PAR at least as of December, 2013, including via a Quick Start guide included in the product packaging and via Vari-Lite’s (then Philips) website. (Palmer Decl., ¶¶ 6-12; *see also* Wood Decl., ¶¶ 41-42.)

Showline Manual describes the SL PAR luminaire, which has (a) a “high intensity LED array” on the front of the unit and (b) an integrated “LCD Display / Menu System” and various inputs and outputs on the unit’s rear.

⁴ The “**Palmer Decl.**” (Ex. 1010) is a declaration from Mr. Martin Palmer, the Vari-Lite and Strand Luminaires Product Manager at Signify, regarding the public availability of the Showline Manual.



(Showline Manual, Figure 2 (annotated).)

The integrated LCD Display and Menu System “provides local control” for features and functionality of the RGBW LED array. (*Id.*, 14.) The LCD Display and Menu System includes a user interface, with buttons allowing a user to navigate, access, and select menu settings. (*Id.*, 14-15.)

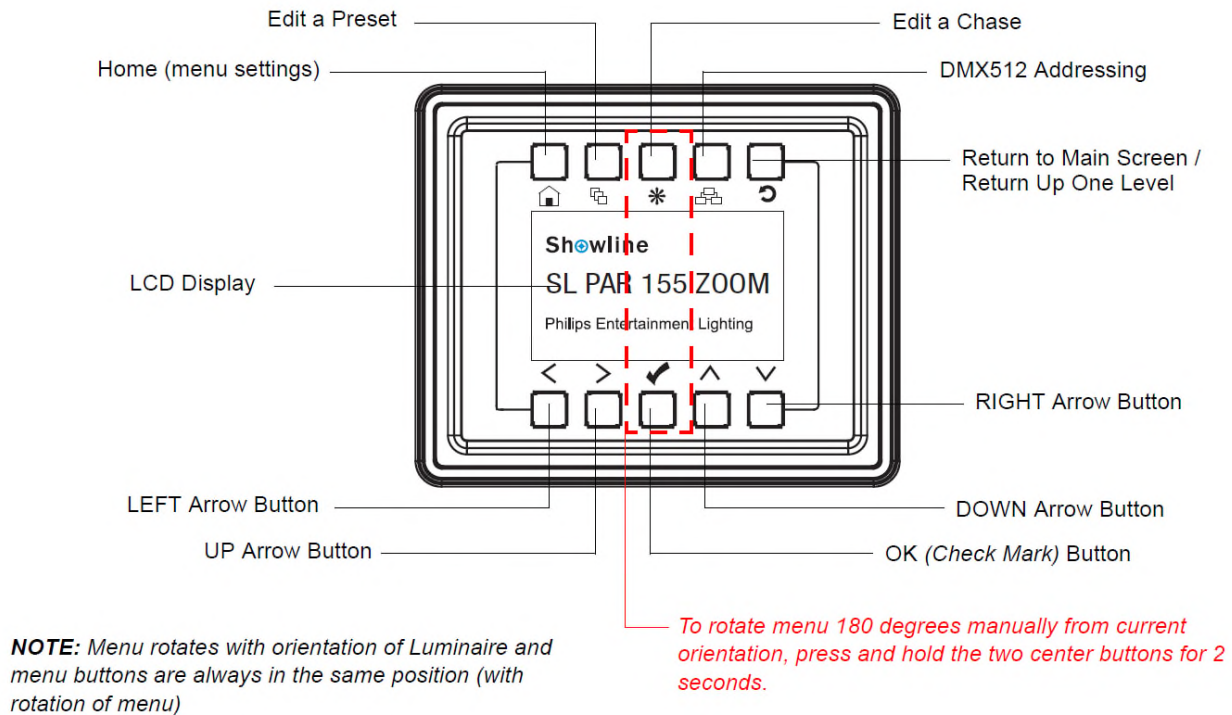


Figure 11: LCD Display and Menu System

(Showline Manual, Figure 11.) The LCD Display and Menu System allows users to select and customize desired lighting effects, such as “presets” and “chases.” (*Id.*, 15-17) Selected and customized presets and chases are then run on the luminaire. (*Id.*)

1. Ground 1a – Showline Manual Anticipates or Renders Obvious Claims 1-6, 8-14, and 16-22

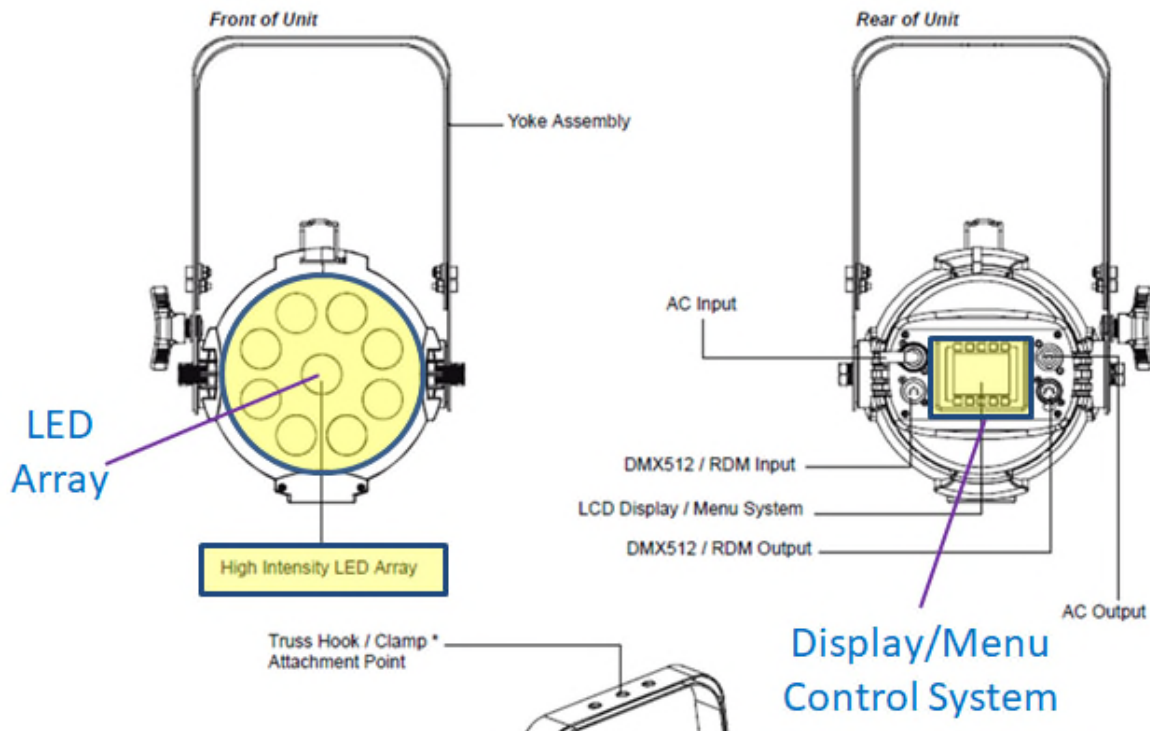
a. Independent Claim 1

Showline Manual anticipates Claim 1. (Wood Decl., ¶ 49.)

Claim 1p: A lighting system comprising:

Showline Manual discloses Claim 1p. (*Id.*, ¶ 50.) Showline Manual discloses the SL PAR, a luminaire unit having a “high intensity LED array” on the front of

the unit. (Showline Manual, 6, 42.) SL PAR offers a plurality of lighting effects, including presets, effects/chases, and strobe/timing, controlled through a “Display and Menu System” on the unit’s back. (*Id.*, 14.)



(Showline Manual, Figure 2 (annotated).)

Claim 1a: a lighting device; and

Showline Manual discloses Claim 1a. (Wood Decl., ¶ 51.) The SL PAR units include a “high intensity LED array.” (Showline Manual, 6.) The LED array in each SL PAR unit is a “Color RGBW LED Array (x9 – 15 Watt High Power LED Chipsets.” (*Id.*, 42.) These LEDs, individually and as an array, are “lighting devices” that provide illumination when running lighting effects, like presets or chases. (*Id.*, 14-17.)



(*Id.*, front cover.)

Claim 1b: 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:

Showline Manual discloses Claim 1b. (Wood Decl., ¶¶ 52-56.) The SL PAR includes an “LCD Display and Menu System” that provides “***local control*** for accessing” fixture settings—namely, that controls the SL PAR and its LEDs.

(Showline Manual, 10, 14 (emphasis added).) The LCD Display and Menu System receives inputs from an interface, and then recalls the appropriate settings for the LED array to produce customizable cinematic effects, including editable presets and eight editable “chases.” (*Id.*, 15-16.)

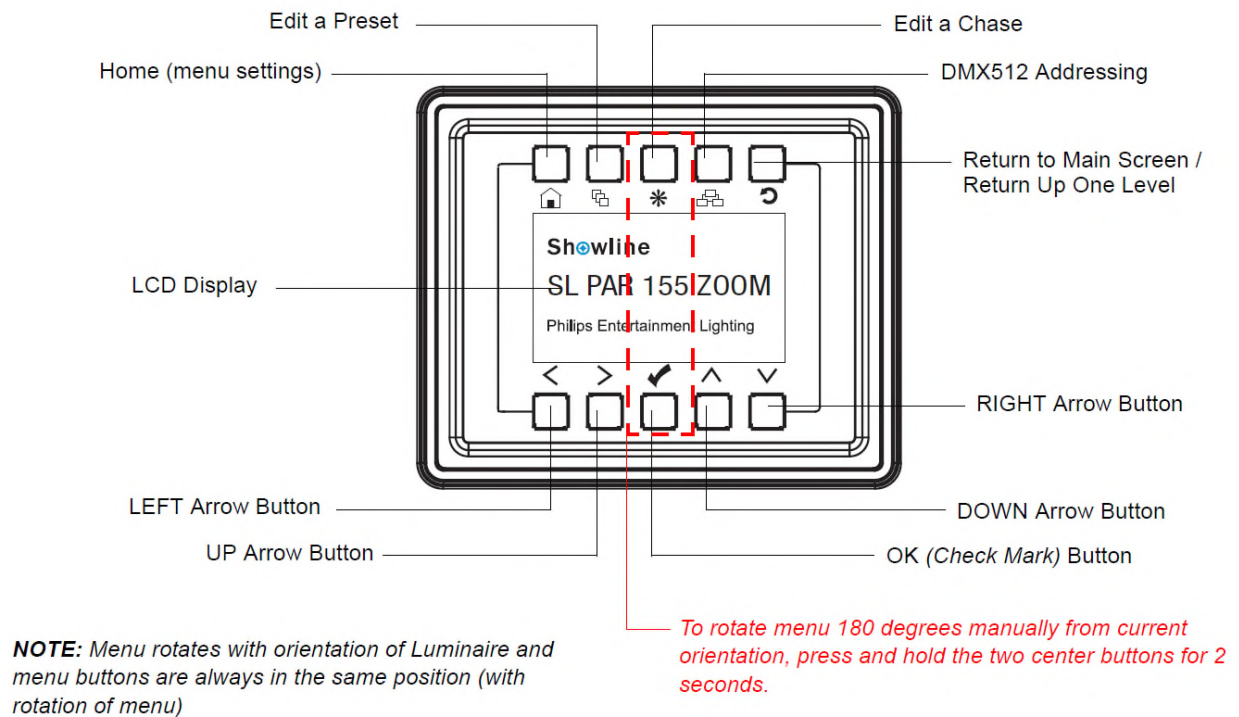
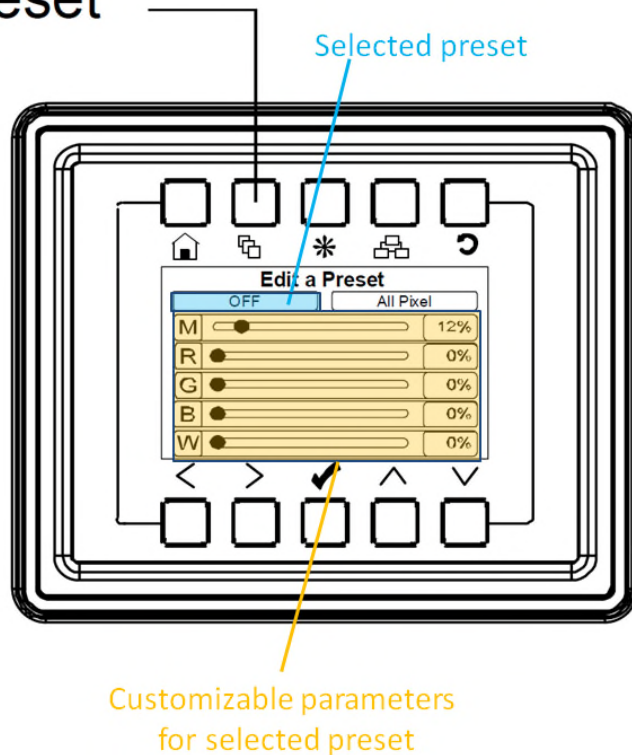


Figure 11: LCD Display and Menu System

(Id., Figure 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 the particular preset. (Id., 15.) The LCD Display and Menu System produces lighting value settings for the LEDs, based on the selected preset and parameter adjustments. (Id., 15-16.)

Edit a Preset



(*Id.*, 15 (annotated).)

Similarly, all chases may be customized through “adjustable parameters” that allow users to customize “the master intensity, speed, and fade values.” (*Id.*, 16.) The editable chases may further be customized to create desired 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.*, 16-17, Table 3; *see also* Wood Decl., ¶¶ 54-55.)

Presets and chase effects can be further customized through a “Strobe / Timing Menu” in the LCD Display and Menu System. (Showline Manual, 17.) The “Strobe / Timing Menu” allows user to select from additional adjustable parameters, which are “instantly applied to any active Preset, Color Filter, or chase.” (*Id.*, 17.) That is, 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 the light output to match the new parameter values. (Wood Decl., ¶ 56.) Table 4 summarizes these parameters:

Table 4: Strobe / Timing Parameters

Parameter	Description
Master Intensity	Overall fixture output intensity level.
Strobe: X	Strobe mode and rate value settings following DMX map (see SL PAR 155 ZOOM RGBW LED Luminaire DMX Mapping for details).
Duration	The time each strobe flash remains ON.
Intensity Timing	The time used to change intensity values when running a chase.
Color Timing	The time used to change color values when running a chase.

(Showline Manual, Table 4.)

Claim 1c: *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*

Showline Manual discloses Claim 1c. (Wood Decl., ¶¶ 57-60.) The SL PAR’s LCD Display and Menu System (or controller) includes a user interface that receives user inputs, through selectable buttons allowing a user to navigate the menus and make selections. (Showline Manual, 14-15.) The LCD Display and Menu System interface (shown below) allows a user to select customizable lighting

special effects, including “Presets” and “chases.” (*Id.* 15-16.) The selectable chase effects include “10 factory defined chases and eight user adjustable chases.” (*Id.*, 14-15.)

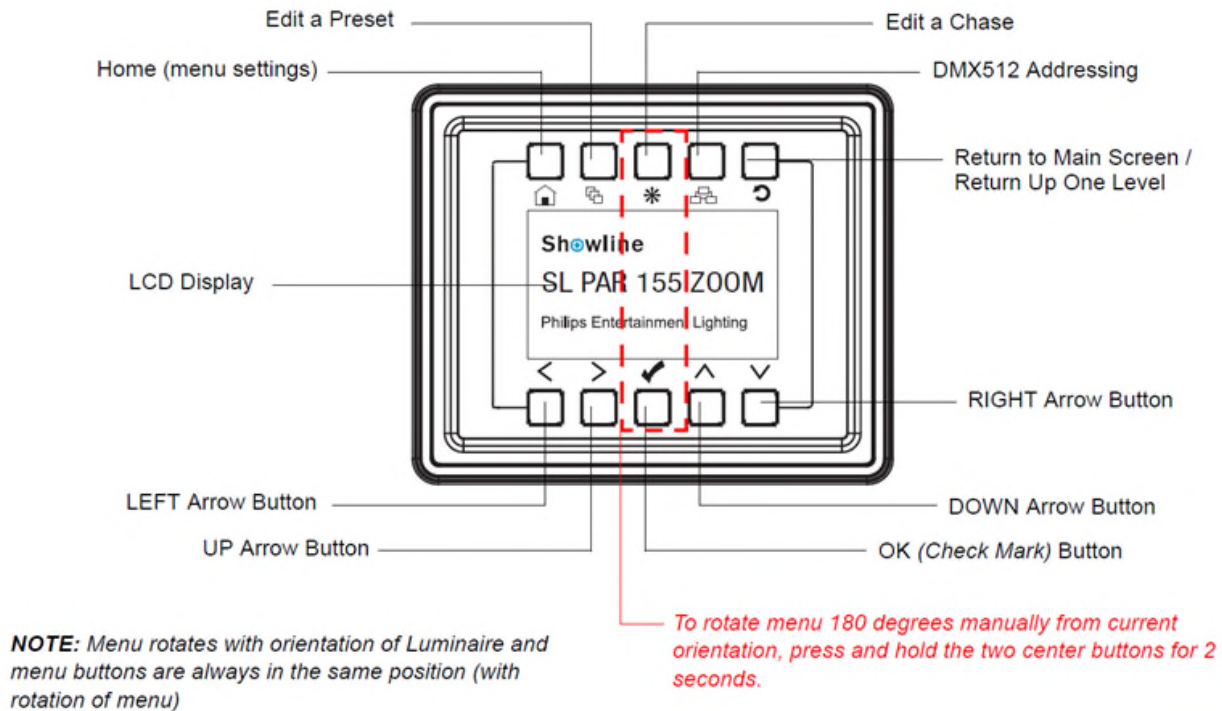


Figure 11: LCD Display and Menu System

(*Id.*, Figure 11.)

Further, the LCD Display and Menu System interface allows users to customize the available effects on the SL PAR. Selected presets can be customized in the “Edit a Preset” menu to customize the intensity and color values for those presets. (*Id.*, 15-16.) Selected chase effects can be customized by selecting adjustable parameters through the menus on the interface, as described in Table 3:

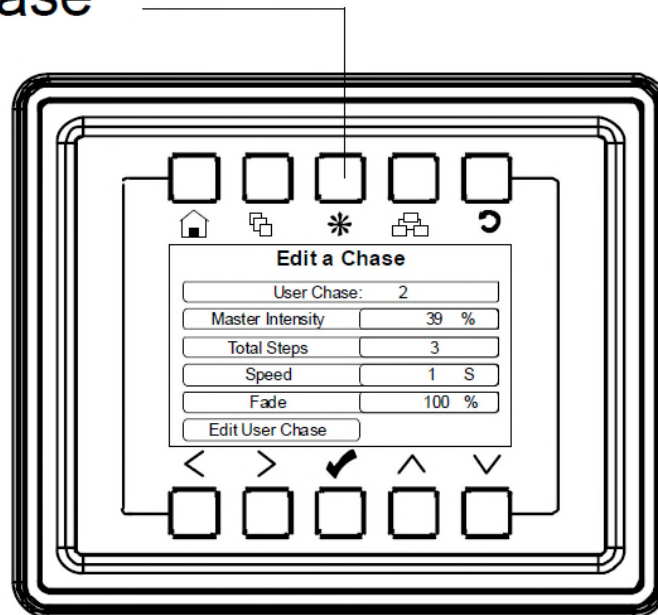
Table 3: Effects Parameters

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

(*Id.*, 16, Table 3.)

The “Eight User chases can be further customized to create different effects on the fixture.” (*Id.*, 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.*)

Edit a Chase



(*Id.*, 17.)

Additionally, 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.*, 17.) These adjustable strobing/timing parameters, selectable through the user interface menu, include (a) adjusting the overall intensity level of the SL PAR 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.*, 17.) These adjustable strobe/timing parameters are summarized in Table 4:

Table 4: Strobe / Timing Parameters

Parameter	Description
Master Intensity	Overall fixture output intensity level.
Strobe: X	Strobe mode and rate value settings following DMX map (see SL PAR 155 ZOOM RGBW LED Luminaire DMX Mapping for details).
Duration	The time each strobe flash remains ON.
Intensity Timing	The time used to change intensity values when running a chase.
Color Timing	The time used to change color values when running a chase.

(*Id.*, Table 4.)

Claim 1d: *an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter,*

Showline Manual discloses Claim 1d. (Wood Decl., ¶¶ 61-63.) 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. (Showline Manual, 15-17.) *See also supra* Claims 1b-1c. 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. (Wood Decl., ¶¶ 61-63.)

When a user adjusts the customizable parameters for a preset or chase, the LCD Display and Menu System calculates and stores new data values for the LED settings to match the adjustments. (*Id.*) In particular, the data values for the LED settings the LCD Display and Menu System sets (calculates) for each preset and chase are based on user-selected parameters, including:

Table 3: Effects Parameters

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

Table 4: Strobe / Timing Parameters

Parameter	Description
Master Intensity	Overall fixture output intensity level.
Strobe: X	Strobe mode and rate value settings following DMX map (see SL PAR 155 ZOOM RGBW LED Luminaire DMX Mapping for details).
Duration	The time each strobe flash remains ON.
Intensity Timing	The time used to change intensity values when running a chase.
Color Timing	The time used to change color values when running a chase.

(*Id.*, 16-17, Tables 3-4 (annotated).) As seen in Tables 3-4, the data values for the LED settings calculated and set by the LCD Display and Menu System are based

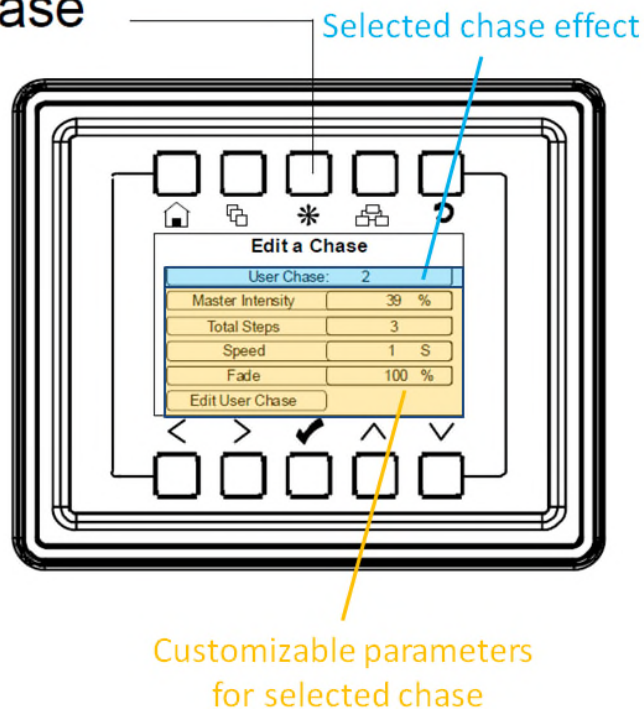
on adjustable simulation parameters, including “intensity” (or brightness), “speed,” “fade,” “duration,” “strobe rate,” and “color timing.” (*Id.*)

Claim 1e: *said at least one simulation parameter depending on the selected user customisable cinematic lighting special effect being simulated,*

Showline Manual discloses Claim 1e. (Wood Decl., ¶¶ 64-66.) Showline Manual discloses that the “simulation parameters” a user may adjust depend on the selected preset or chase effect a user wants to edit and run on the SL PAR. See *supra* Claims 1b-1d. As discussed, users are presented with options to adjust certain parameters of presets and chases *after* selecting a particular preset or chase. (Showline Manual, 15-17.) For example, with respect to presets, a user first selects a preset to edit by using buttons to “scroll through” available presets. (*Id.*, 15.) After selecting a preset to edit, a user may then “scroll through the parameters” for that preset, and use “left and right arrow buttons to make adjustments.” (*Id.*) Thus, the parameters adjusted depend on the effect being edited. (Wood Decl., ¶ 64.)

As another example, 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:

Edit a Chase



(Showline Manual, 17 (annotated).) As with presets, 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.*) Again, the adjusted parameters are particular to the chase being edited. (Wood Decl., ¶ 65.)

Finally, the “strobe/timing” parameters shown in Table 4 of Showline Manual can be assigned to an “active Preset, Color filter, or chase.” (Showline Manual, 17.) Thus, those parameters too depend on the particular preset, color filter, or chase that is active. (Wood Decl., ¶ 66.)

Claim 1f: *[said effect simulator]... adapted to output said time varying lighting value to said lighting device so as to simulate the selected user customisable cinematic lighting special effect;*

Showline Manual discloses Claim 1f. (Wood Decl., ¶¶ 67-69.) The 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 supra* Claims 1b-1d. That is, 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 from the LCD Display and Menu System to the LED array and the effect is implemented. (Showline Manual, 15-17; *see also* Wood Decl., ¶¶ 67-69.)

In addition, “strobe/timing” values are “instantly applied to any active Preset, Color filter, or chase.” (Showline Manual, 17.) Thus, the LCD Display and Menu System instantly calculates and sends new LED setting values to implement particular strobe/timing adjustments with respect to the lighting effect being run. (*Id.*; *see also* Wood Decl., ¶¶ 68-69.) For example, adjustments to the “Color Timing” parameter are output to the LEDs to adjust “the time used to change color values when running a chase.” (Showline Manual, 17.)

Claim 1g: wherein said lighting device and said controller are integrated in a combined unit.

Showline Manual discloses Claim 1g. (Wood Decl., ¶ 70.) The LED array of the SL PAR is located on the front of the unit, and the LCD Display and Menu

System (which provides “local control” of the unit) is located on the rear of the same unit:

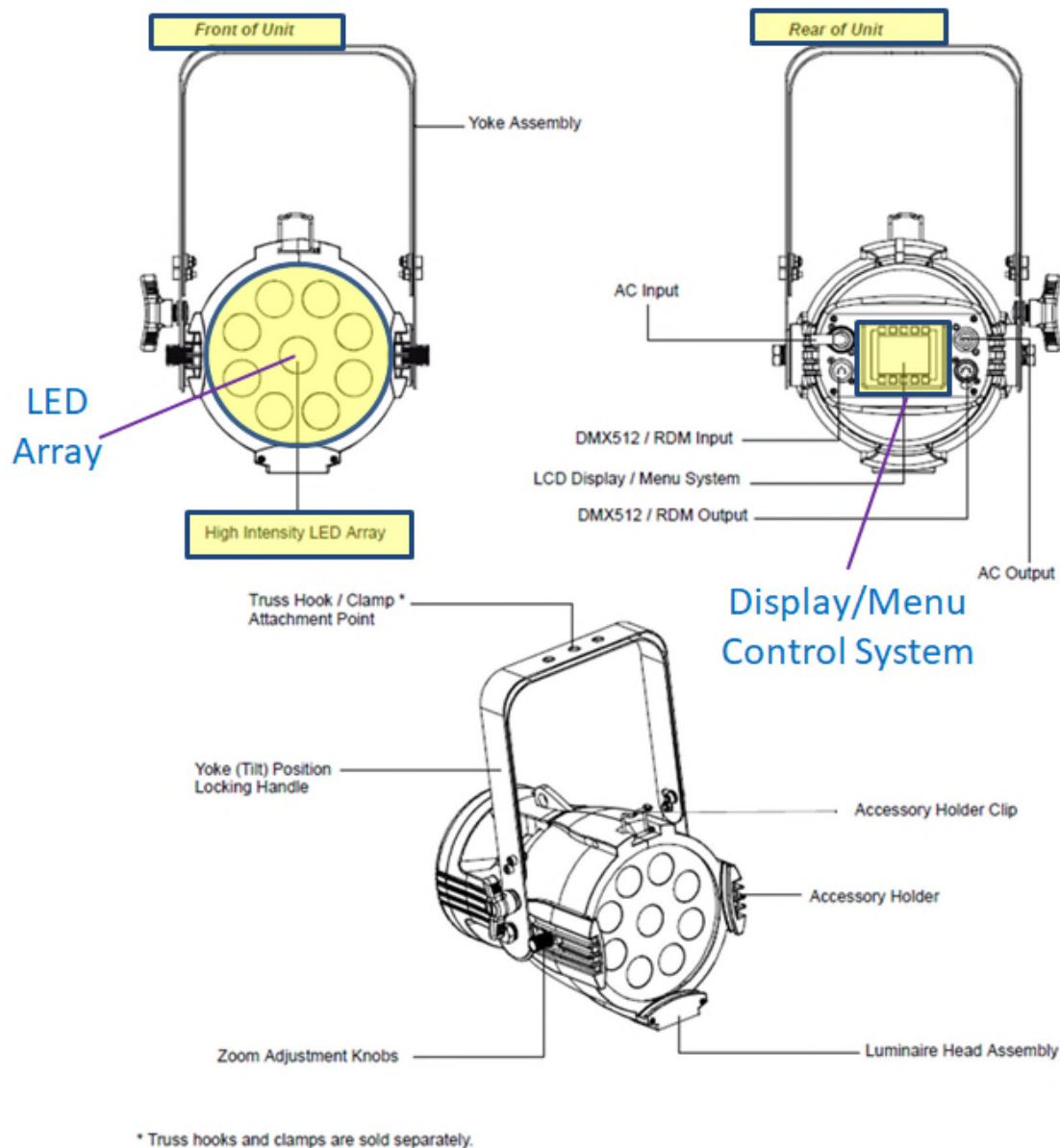


Figure 2: SL PAR 155 ZOOM RGBW LED Luminaire Common Components

(*Id.*, Figure 2 (annotated).) Thus, Showline Manual teaches that the lighting device (*e.g.*, LEDs) and controller (*e.g.*, LCD Display and Menu System) are integrated into a single SL PAR unit. (*See also* Wood Decl., ¶ 70.)

b. Dependent Claim 2

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.*

Showline Manual anticipates Claim 2. (Wood Decl., ¶¶ 71-73.) The user interface of the LCD Display and Menu System enables a user to select and edit presets and chases, and to add strobe/timing adjustments to any preset or chase, to create desired effects. *See supra* Claim 1c. Menu options allowing a user to edit presets and chases to customize the selected effects are shown in Figure 11:

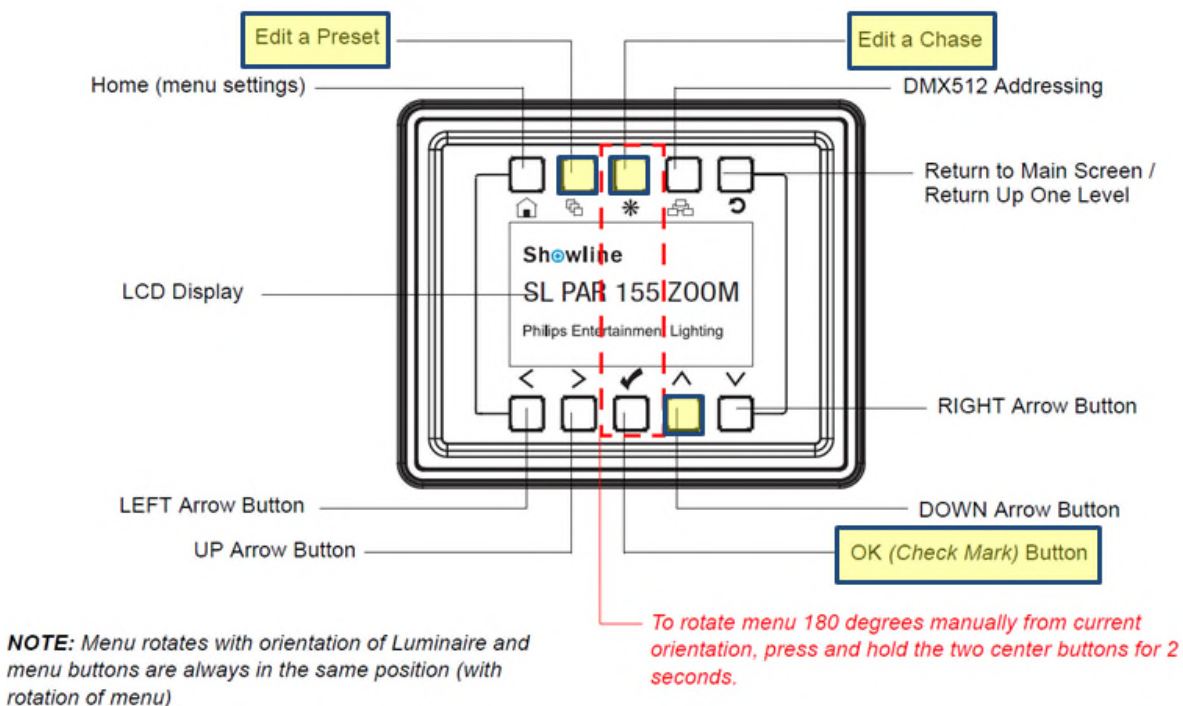
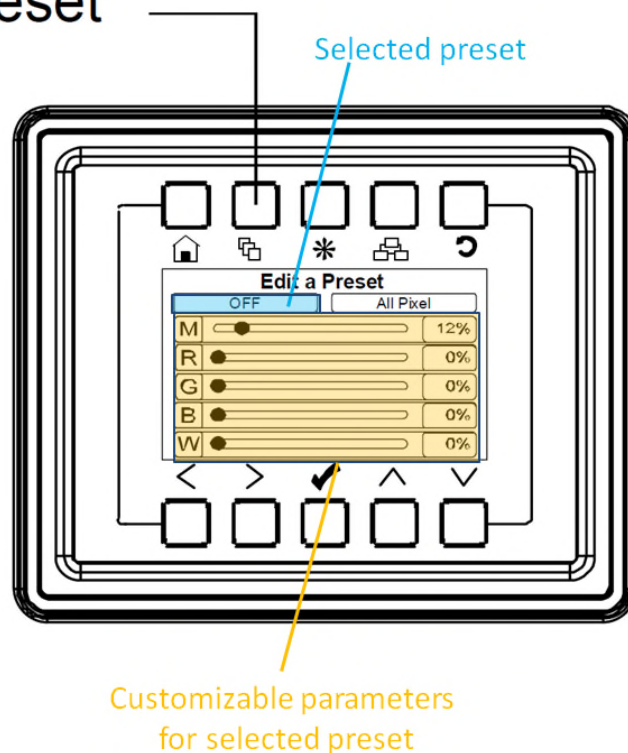


Figure 11: LCD Display and Menu System

(Showline Manual, Figure 11 (annotated).)

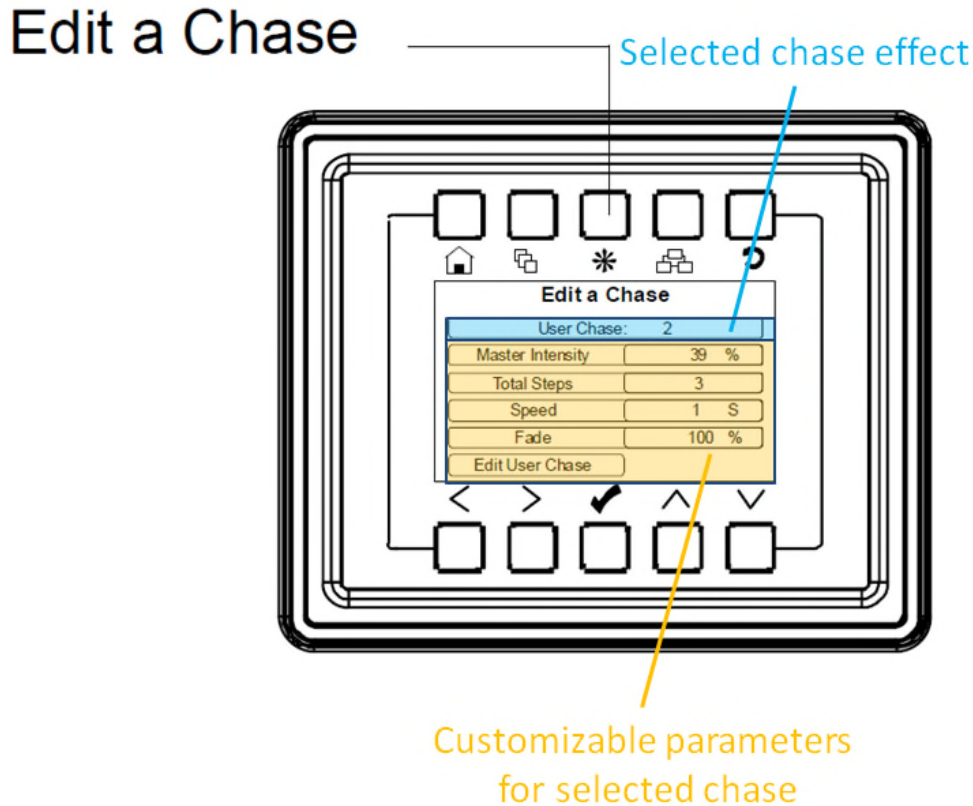
As discussed with respect to Claims 1b-1c, the LCD Display and Menu System buttons allows users to navigate and make selections to adjust parameters of lighting values for editable presets and chases, including intensity, duration, timing and colors. (*Id.*, 15-17, Tables 3-4.) In particular, by using the up, down, left, and right arrow buttons on the LCD Display and Menu System, users can edit presets to adjust selected parameters, edits chases to adjust selected parameters, and assign and adjust strobe and timing parameters to any preset or effect. (*Id.*, 15-17.) For example, preset color parameters can be edited by changing “RGBW” (*i.e.*, red, green, blue and white) or “HISC” (*i.e.*, hue intensity, saturation, and color) parameters. (*Id.*, 15.)

Edit a Preset



(Id., 15 (annotated).)

Similarly, the LCD Display and Menu System provides user interface menus for a user to select and customize chase effects, including intensity, speed, fade and colors. (Id., 16-17.)



(Id., 17 (annotated).)

c. Dependent Claims 3-5

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.*

Showline Manual anticipates Claims 3-5. (Wood Decl., ¶¶ 74-76.) The SL PAR is an “RGBW LED” luminaire:



Moreover, the SL PAR includes an array of nine RGBW (*i.e.*, multiple different colored) LEDs. (Showline Manual, 42 (SL PAR is a “**Color RGBW LED** Array (x9 – 15 Watt High Power LED Chipsets) (emphasis added); *see also id.*, 15, 17, 21, 28-29 (referencing control of red, green, blue, and white LEDs.)

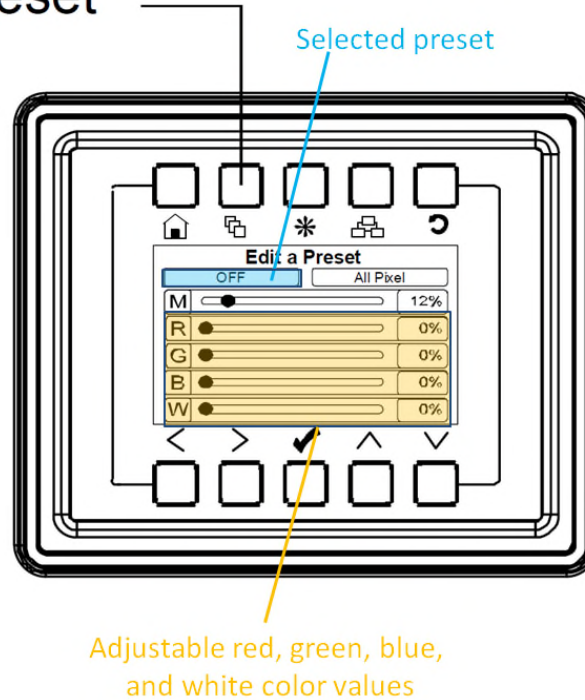
d. Dependent Claim 6

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.*

Showline Manual anticipates Claim 6. (Wood Decl., ¶¶ 77-85.) Showline Manual discloses that the color of the SL PAR’s LEDs 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. (Showline Manual, 15-17.)

In the “Edit a Preset” menu, a user can adjust the “RGBW” (*i.e.*, red, green, blue and white) or “HISC” (*i.e.*, hue intensity, saturation, and color) parameters to change the color that will be output by the LEDs for that particular preset. (*Id.*, 15.)

Edit a Preset



(*Id.*, 15 (annotated).)

In the “Edit a Chase” menu, users can select “presets or color filters” to apply to each step in the chase. (*Id.*, 17.) Assigning a preset or color filter to a step controls the color the LEDs will out for that particular step in the chase. (Wood Decl., ¶ 79.) The Showline Manual further discloses that the “Edit a Chase” menu allows adjustments to “RGBW” (*i.e.*, red, green, blue and white) or “HISC” (*i.e.*, hue intensity, saturation, and color) parameters to change the color. (Showline Manual, 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.*, 17.) That is, when a chase effect

includes multiple colors, the “Strobe/Timing” menu controls the timing of changes between these different colors. (Wood Decl., ¶ 80.)

Showline Manual also discloses that, in addition to color adjustments discussed above, “color temperature” is also adjustable. (Wood Decl., ¶¶ 81-85.) In particular, the “Color Temperature” is “user adjustable” between “2700 – 6500K.” (Showline Manual, 42.)

1. Operational Specifications

Source:	Color RGBW LED Array (x9 - 15 Watt High Power LED Chipsets)
Beam Angle:	8 to 40 Degrees (hand adjustable)
Light Output:	> 3,200 lumens
Color Temperature:	2700 - 6,500K (user adjustable)

(*Id.*, 42 (“Operational Specifications” table) (annotated); *see also id.*, 25

(describing color presets included “White” values at temperatures between 2700K and 10000K), 30 (describing correlated color temperature (CCT) control through DMX settings when in the HSIC mode on the LCD Display and Menu System.) DMX is a common control protocol standard created by and for the entertainment lighting industry. (Wood Decl., ¶¶ 81-85.)

A POSITA would understand from Showline Manual that user adjustment of color temperature would be done through the LCD Display and Menu System. (Wood Decl., ¶ 85.) The LCD Display and Menu System is described as providing “local control” of the fixture settings. (Showline Manual, 14.) A POSITA would

recognize that a user-adjustable color temperature would be one of these fixture settings. (Wood Decl., ¶ 85.) Moreover, as indicated on pages 15 and 17 of the Showline Manual, the LCD Display and Menu System can access RGBW and HSIC parameters based on DMX maps. (Showline Manual, 15, 17.) 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.*, 30.) As Showline Manual indicates that these DMX control settings can be made available to the user through the LCD Display and Menu System, a POSITA would understand that the LCD Display and Menu System can implement these color temperature adjustments. (Wood Decl., ¶ 85.)

e. Dependent Claim 8

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.*

Showline Manual anticipates or renders obvious Claim 8. (Wood Decl., ¶ 86.) Showline Manual discloses the “color temperature” of the LED array is “user adjustable” and operates in the range of 2700–6500K:

1. Operational Specifications

Source:	Color RGBW LED Array (x9 - 15 Watt High Power LED Chipsets)
Beam Angle:	8 to 40 Degrees (hand adjustable)
Light Output:	> 3,200 lumens
Color Temperature:	2700 - 6,500K (user adjustable)

(Showline Manual, 42 (annotated).) Showline Manual further discloses that, in

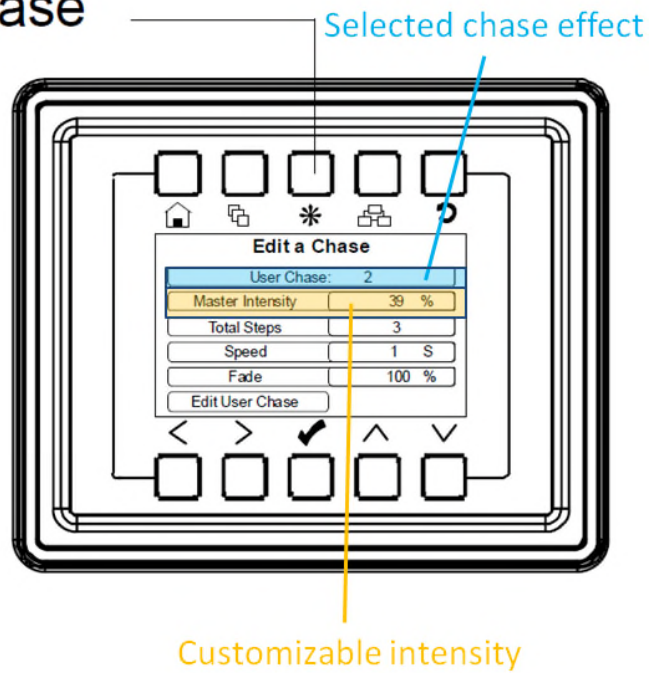
other modes, color presets which may be implemented by the SL PAR include “White 10000K,” “White 8000K,” “White 6500K,” “White 5600K,” “White 5000K,” “White 4500K,” “White 4000K,” “White 3200K,” “White 3000K,” and “White 2700K.” (*Id.*, 25, 30.) Thus, the SL PAR is operable to produce light at a color temperature in the claimed range. (Wood Decl., ¶ 86.)

f. Dependent Claim 9

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.*

Showline Manual anticipates Claim 9. (Wood Decl., ¶ 87.) 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 supra* Claims 1b-1d. For example, Showline Manual indicates that “the master intensity” for any selected chase may be adjusted using “Up and Down” buttons and “Left and Right buttons” on the LCD Display and Menu System. (Showline Manual, 16, Table 3.) In addition, through the “Edit a Chase” and “Strobe/Timing” menus, users can adjust the “master intensity” of the LED output. (*Id.*, 16-17.)

Edit a Chase



(Id., 17 (annotated).)

g. Dependent Claim 10

Claim 10: *The lighting system according to claim 1, wherein the simulation parameter comprises at least one of a colour and a colour temperature.*

Showline Manual anticipates Claim 10. (Wood Decl., ¶ 88.) Showline Manual discloses that the adjustable parameters include selections of color filters and user adjustable color temperature. 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 *supra* Claims 6, 8.

h. Dependent Claim 11

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.

The Showline Manual anticipates Claim 11. (Wood Decl., ¶¶ 89-90.)

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

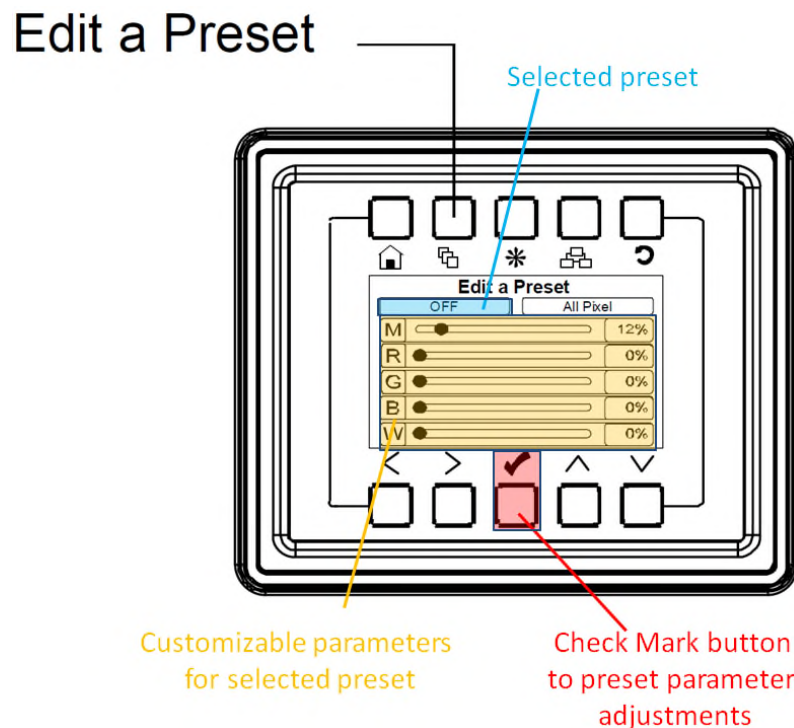
Further, a POSITA would understand from Showline Manual that the editable chases, which can include various colors, flashing, and strobing, would produce other of the claimed effects, such as effects that mimic at least a police light, lightning, paparazzi flashes, welding, sparking, a fire or candle, and neon signs. (Wood Decl., ¶ 90.) For example, 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. Dependent Claims 12 and 21

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 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.*

Showline Manual anticipates Claims 12 and 21. (Wood Decl., ¶¶ 91-94.) A user may edit presets using the SL PAR's LCD Display and Menu System, and once all values are adjusted as desired, pressing a "Check Mark" button saves the preset (with its parameters). (Showline Manual, 15-16.)



(*Id.*, 15 (annotated).) When the "Check Mark" is selected, a "Save Preset Menu" option appears, and the user can "select the preset number to save to." (*Id.* 15-16.) Saved presets can then be "recalled via the menu." (*Id.*, 16.)

Users can also adjust parameters for any chase, including the ten factory defined chases and the eight user editable chases. (*Id.*, 16.) Again, users can use

buttons on the LCD Display and Menu System to select parameters, and then press a “Check button” to save when done. (*Id.*) These parameterized chases can be “recalled” through the menu system. (*Id.*) Similarly, a user can “edit and save” the user-editable chases in the “Edit a 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.*, 17.)

A POSITA would understand from Showline Manual that the adjusted values and parameters selected by the user would be “saved” in and “recalled” from a memory in the SL PAR unit. (Wood Decl., ¶ 94.)

j. Dependent Claim 13

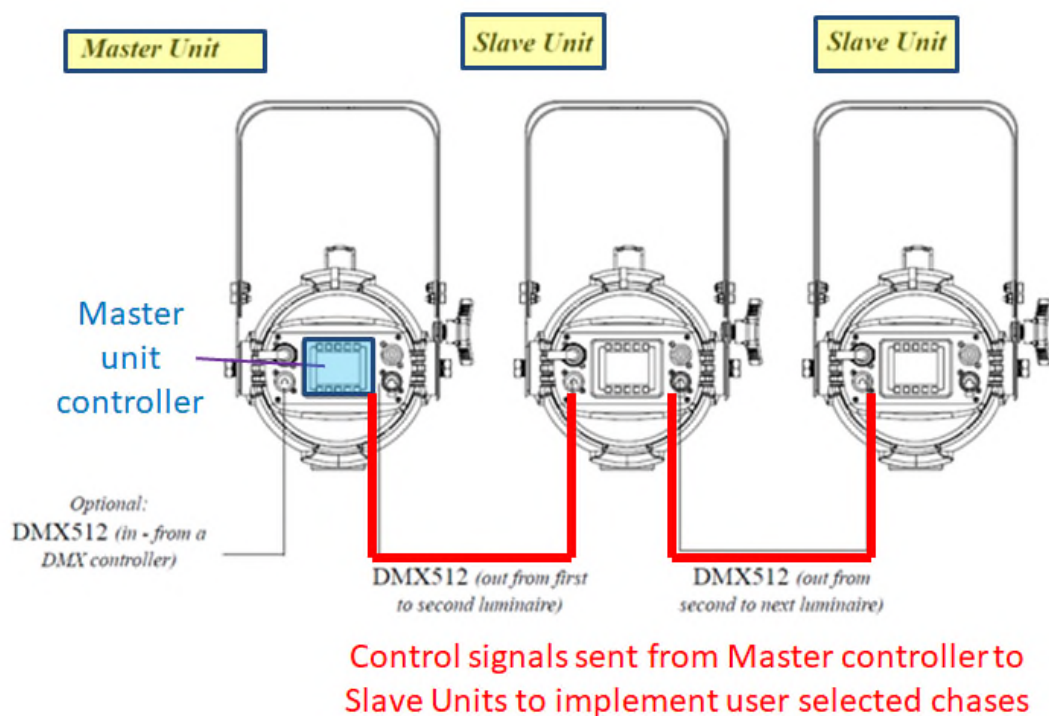
Claim 13: *The lighting system according to claim 1, wherein the controller is adapted to control a plurality of lighting devices in dependence on the selected user customisable cinematic lighting special effect.*

Showline Manual anticipates Claim 13. (Wood Decl., ¶¶ 95-97.) Each LED in the SL PAR array of nine LEDs is itself a lighting device. *See supra* Claim 1a. Further, the LCD Display and Menu System controls this plurality of nine LED “lighting devices” in the SL PAR. *See supra* Claims 1b-1f.

In addition, the LCD Display and Menu System in one SL PAR can act as a “Master” controller, to control a plurality of “Slave” SL PARs. (Showline Manual, 23.) In particular, “[t]he Master / Slave Operational Mode allows one SL PAR 155 ZOOM RGBW LED Luminaire 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. (Wood Decl., ¶¶ 96-97.)

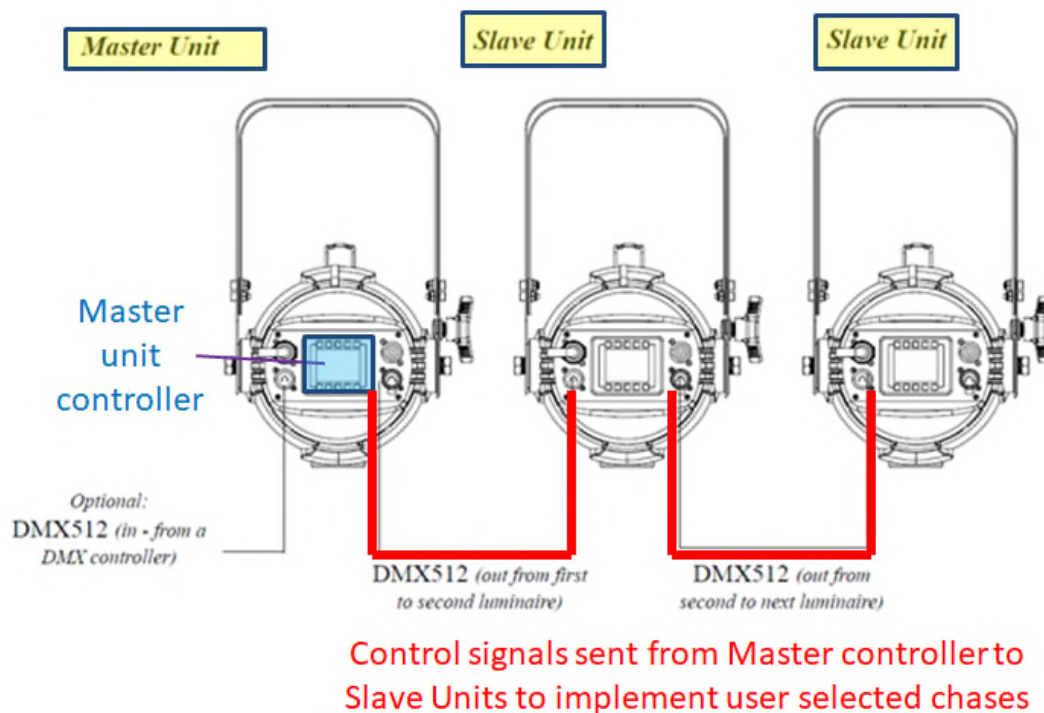


(Showline Manual, Figure 13 (annotated); *see also id.*, 10.)

k. Dependent Claim 14

Claim 14: *The lighting system according to claim 1, further comprising a further lighting device, said further lighting device being separate from said controller.*

Showline Manual anticipates Claim 14. (Wood Decl., ¶ 98.) In the “Master/Slave” mode, the “slave unit” SL PARs, with their LED arrays, are controlled by and ***separate from*** the “master unit” SL PAR (and its LCD Display and Menu System). *See supra* Claim 13.



(Showline Manual, Figure 13 (annotated); *see also id.*, 10.)

I. Dependent Claim 16

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.*

Showline Manual anticipates Claim 16. (Wood Decl., ¶¶ 99-101.) The LCD Display and Menu System controls the plurality of LEDs in the array of nine

LEDs. *See supra* Claim 1b-1e. The LCD Display and Menu System can at least offset or overlap the flashing of these LEDs to simulate a moving light source.

For example, in creating and producing chase effects, the LCD Display and Menu can set, for example, a number of different steps in a chase, along with intensity and fade values for each step. (Showline Manual, 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.*; *see also* (Wood Decl., ¶ 100.) 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). (*Id.*, ¶ 100.)

In addition, in the “Master/Slave” mode, the slave units “mimic the master unit’s operation in all cases.” (Showline Manual, 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. (Wood Decl., ¶ 101.)

m. Dependent Claim 17

Claim 17: *The lighting system according to claim 1, wherein the controller is separable from the lighting device.*

Showline Manual anticipates Claim 17. (Wood Decl., ¶¶ 102-103.) Showline Manual explains that, in addition to being able to control the SL PAR via the LCD Display and Menu System, a separable DMX512 control source may be used to provide the same controls. (Showline Manual, 9-10, 19-20; *see also* Wood Decl., ¶ 102.) The manual states, for example, that “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.***” (Showline Manual, 15-17 (emphasis added).) 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.*, 10; *see also* Wood Decl., ¶¶ 102-103.) This DMX512 controller can be disconnected from the SL PAR (including its LED array) and is therefore separable. (*Id.*)

n. Dependent Claim 18

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.*

Showline Manual anticipates Claim 18. (Wood Decl., ¶ 104.) The LCD Display and Menu System includes, for example, an LCD “display” with selectable menu “buttons.” *See supra* Claim 1c.

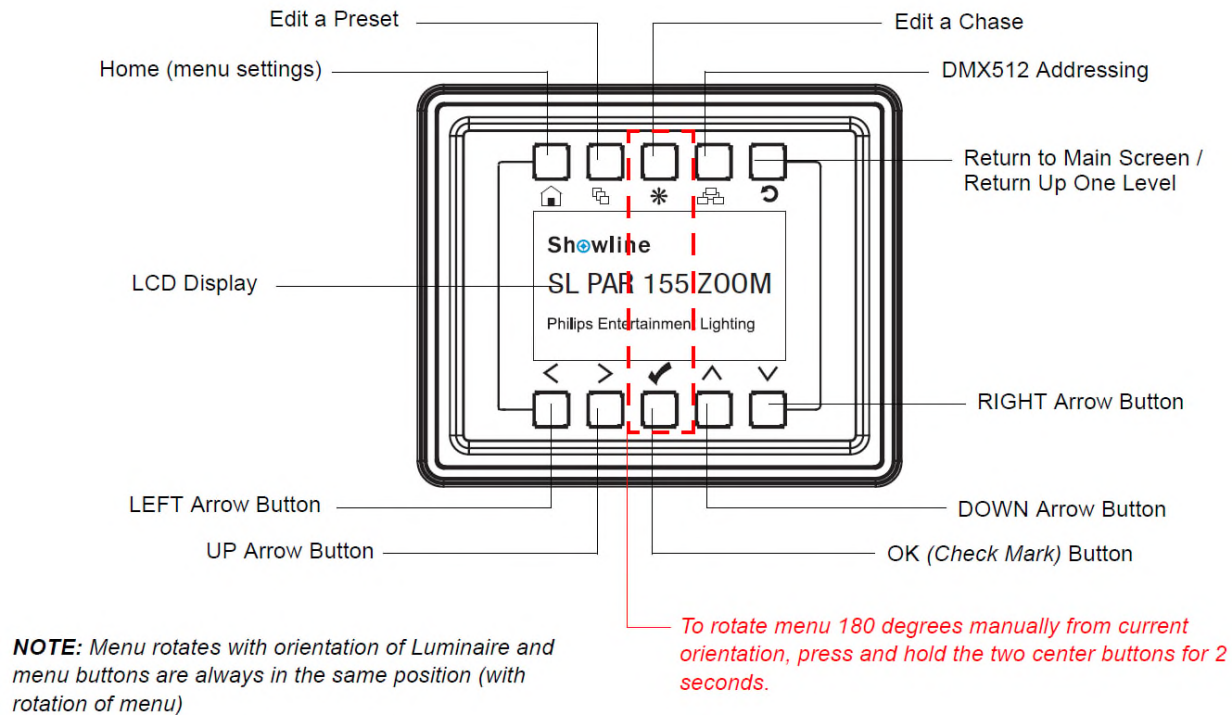


Figure 11: LCD Display and Menu System

(Showline Manual, Figure 11.)

o. Dependent Claim 19

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.*

Showline Manual anticipates or renders obvious Claim 19. (Wood Decl., ¶¶ 105-107.) As discussed in Section VI.A above, the “converter” ensures the signals are of the proper type to be input into the LEDs or other light elements. A POSITA would understand from Showline Manual that the SL PAR includes the claimed “converter.” (Wood Decl., ¶¶ 105-107.) The LEDs in the SL PAR are “15 Watt High Power LED Chipsets.” (Showline Manual, 42.) A POSITA would understand

that the SL PAR includes 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 (Wood Decl., ¶¶ 105-107.) In particular, the color and intensity (brightness) values for the presets and chases (*see supra* Claims 1d, 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. (Wood Decl., ¶ 107.)

p. Dependent Claim 20

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.*

Showline Manual anticipates or renders obvious Claim 20. (Wood Decl., ¶¶ 108-110.) A POSITA would have known, and understood from Showline Manual, that the SL PAR could be used for at least of videography, broadcast, cinematography, studio filming, and location filming. As was well known in the art to a POSITA, Showline is a brand name of Vari-Lite, a company that manufactured luminaires for film, TV, and theatrical use. (Palmer Decl. ¶ 7; Wood Decl., ¶ 108.) Further, as was also well known, the SL PAR was designed and sold for such end uses. (Palmer Decl. ¶ 7 (noting that the SL PAR 155 is often used in

“entertainment lighting and to provide special lighting effects in video and studio filming environments.”); Wood Decl., ¶ 108.)

Showline Manual also 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. (Showline Manual, 11-12.)

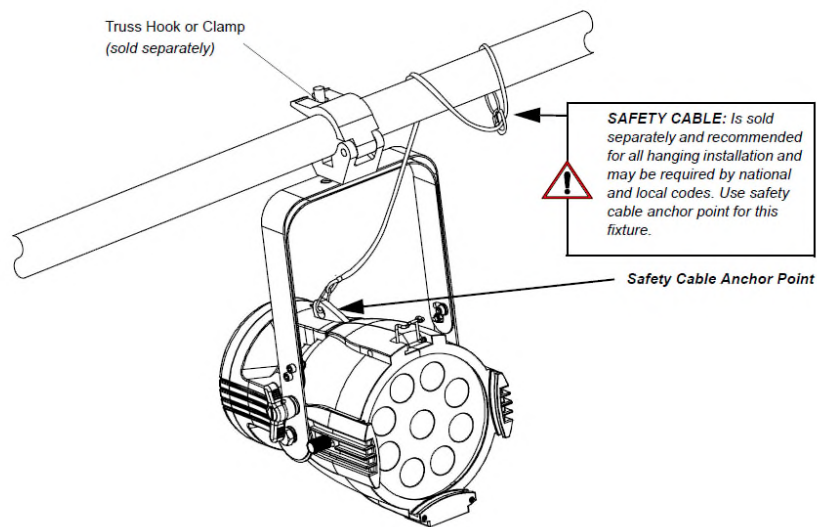


Figure 8: Mounting the Fixture - Hanging Applications

(*Id.*, Figure 8.)

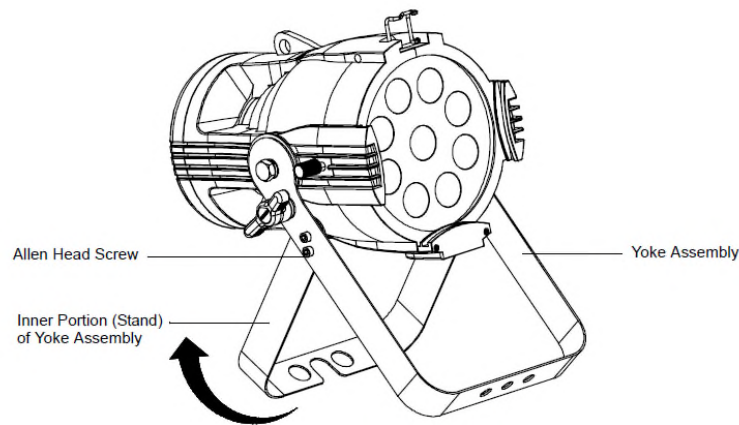


Figure 9: Floor Mounting

(*Id.*, Figure 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. (Wood Decl., ¶ 109.) Indeed, these truss and floor mounting configuration are expected 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 Showline Manual (*see, e.g.*, Showline Manual, 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. (Wood Decl., ¶ 110.)

q. Dependent Claim 22

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.*

Showline Manual anticipates Claim 22. (Wood Decl., ¶ 111.) Showline Manual discloses that, 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. Stated differently, an effect selected on the “master unit” via its LCD Display and Menu System is run (or played) on the “slave” units. *See supra* Claim 14.

2. Ground 1b – The Showline Manual in View of Choong Renders Obvious Claim 7

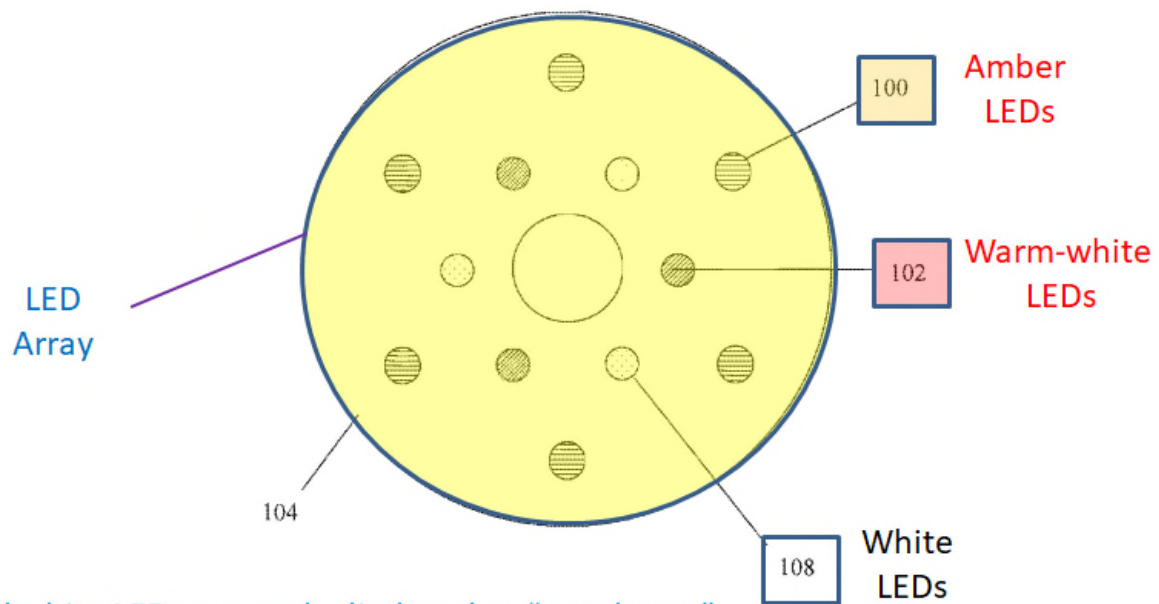
Claim 7: *The lighting system according to claim 3, wherein the lighting device comprises at least one ‘warm’ white and at least one ‘cool’ white LED.*

Showline Manual in view of Choong⁵ renders obvious Claim 7. (Wood Decl., ¶¶ 112-121.) The ’258 describes “warm” white LEDs as those having temperatures in the range of 2800 Kelvin and “cool” white LEDs as those having temperatures in the range of 7000 Kelvin. *See* ’258, 8:54-64.

⁵ U.S. Patent No. 8,632,208 to Choong (“**Choong**”) (Ex. 1005), titled “Methodology of Providing White Lighting with Colour Combination,” was filed November 7, 2008 and issued January 21, 2014. Choong is prior art to the ’258 under at least 35 U.S.C. § 102(a)(1).

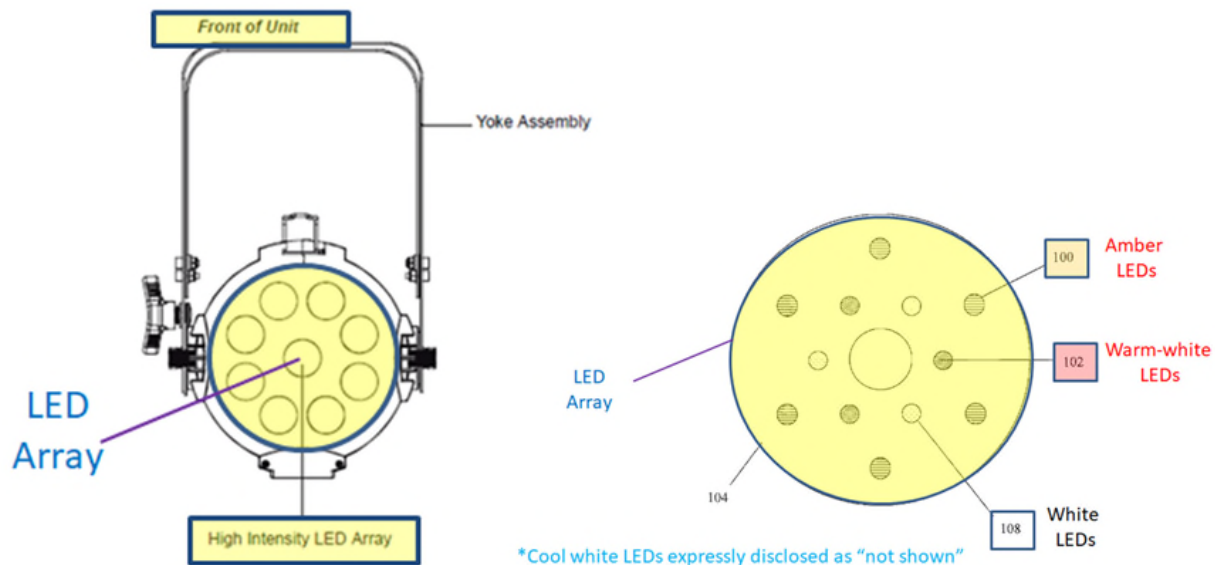
Showline Manual discloses that the SL PAR's LEDs can be "RGBW" (*i.e.*, red, blue, green, and white), and that the SL PAR can produce white light in the temperature ranges of 2800K and 7000K. (Showline Manual, 25 (indicating color presets of White 2700K through White 10000K), 42.) Further, the SL PAR can make color corrections to produce a "Cool White / Warm White" using a "Harmonize Color Calibration" feature. (*Id.*, 21.)

Choong, in the same field of art as Showline Manual, discloses a controllable LED light source comprising a plurality of LEDs to produce white light output at different color temperatures. (Choong, Abstract, 2:56-63.) Choong **explicitly** discloses using both "warm" white and "cool" light LEDs in its array (shown below), 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.*, 2:56-63 (emphasis added); *see also id.*, 4:39-55 ("The second group of LEDs comprises warm-white LEDs (102) with CCT range of 2500K to 3700K. ... The fourth group of LEDs comprises cool white LEDs (not shown) with CCT range of 5000K to 7000K."), 5:7-12.)



(*Id.*, Figure 1 (annotated).)

It would have been obvious to a POSITA to use the “cool” white and “warm” white LEDs disclosed in Choong in the LED array of Showline Manual. (Wood Decl., ¶¶ 114-121.) Choong and Showline Manual are analogous art; both disclose groups of LEDs provided in array that are controlled to produce desired white light temperature output:



Showline Manual

Choong

(Compare Showline Manual, Figure 2 (annotated), with Choong Figure 1 (annotated); see also Showline, 14-17, 21; Choong, 4:39-5:12; Wood Decl., ¶¶ 114-118.)

A POSITA would have recognized that using the “warm” and “cool” white LEDs in Choong in the LED array of Showline Manual would be the expected use of such well-known LED lights. (Wood Decl., ¶¶ 119-121.) A POSITA would have been motivated to use the “cool” and “warm” white LEDs taught in Choong in the LED array of Showline Manual to achieve the same white light output across a range of color temperatures, without needing extra power or increased LEDs of combined colors. (*Id.*)

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,

when used in Showline Manual’s LED array, would continue to perform their same function: white light at a particular desired temperature under control of a processor. (*Id.*) Applying the teachings of Choong to Showline Manual’s LED array would have merely involved replacing one known technique of producing white light (mixing light from red, blue and green LEDs) with another (use of warm and cool white LEDs) to yield a predictable result (controlled white light output in the temperature range from 2500K to 7000K). (*Id.*)

3. **Ground 1c – The Showline Manual in view of Reinoso Renders Obvious Claim 15**

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.*

Showline Manual in view of Reinoso⁶ renders obvious Claim 15. (Wood Decl., ¶¶ 122-129.) Showline Manual discloses wired communication interfaces on the SL PAR units to communicate with other SL PAR units. *See supra* Claim 13. In particular, the interface on the rear of the SL PAR unit includes an interface

⁶ U.S. Patent No. 8,581,513 to Reinoso (“**Reinoso**”) (Ex. 1006), titled “Battery Powered Wireless DMX LED Lighting System” filed November April 20, 2012 and was issued November 12, 2013. Reinoso is prior art to the ’258 under at least 35 U.S.C. § 102(a)(1).

having connections for wired DMX cables, including “DMX512/RDM” input and output connectors:

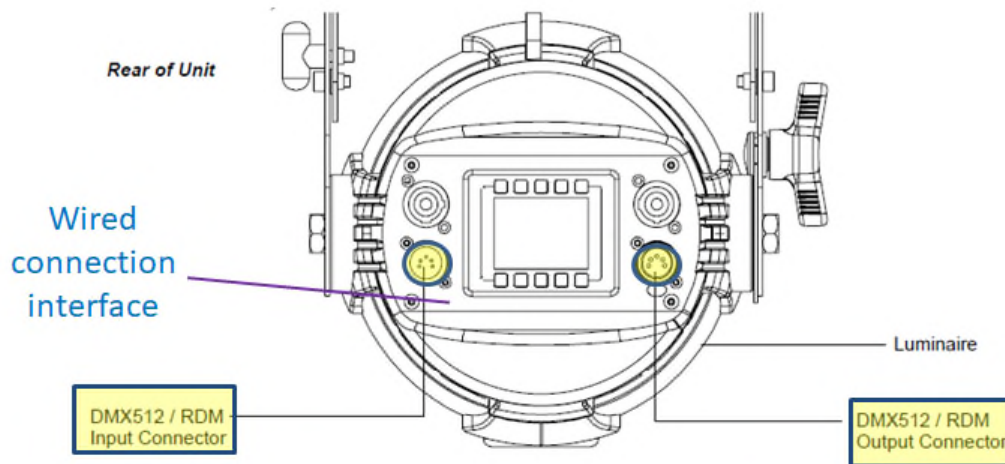
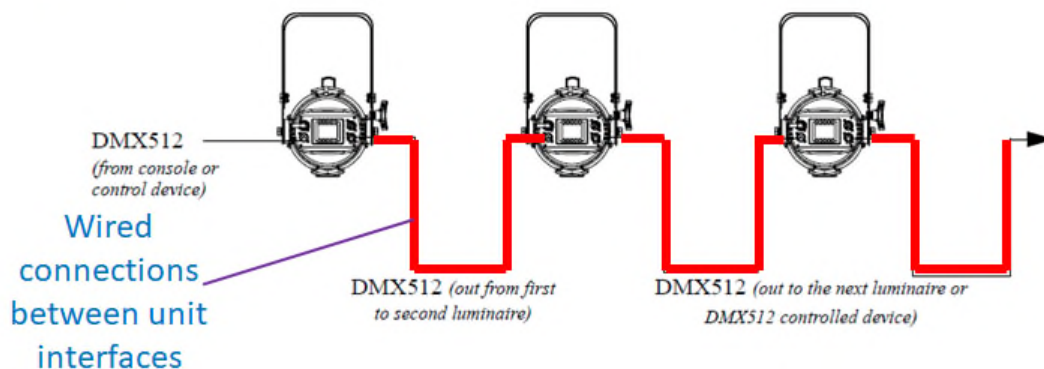


Figure 5: SL PAR 155 ZOOM RGBW LED Luminaire DMX512 Input / Output Connections

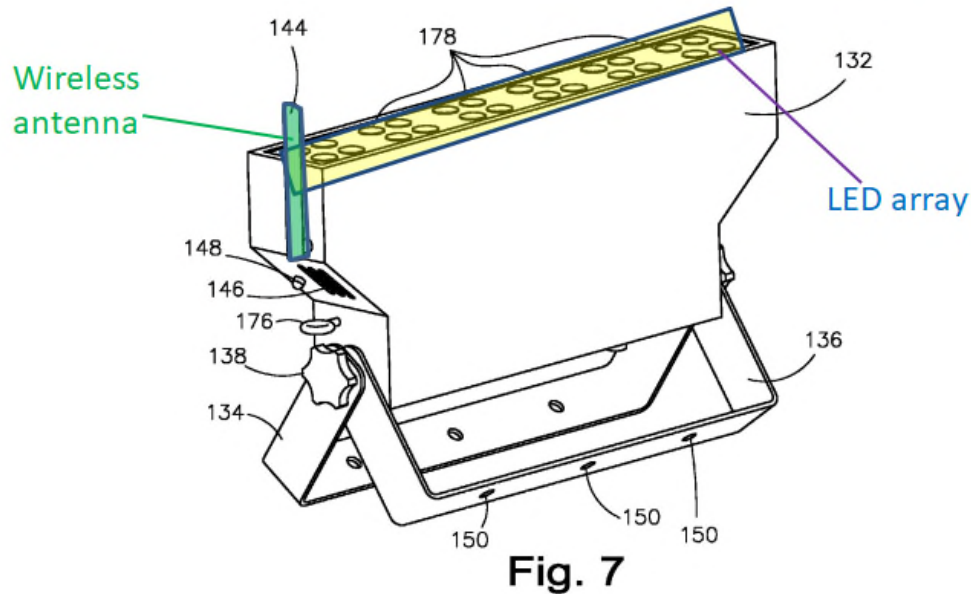
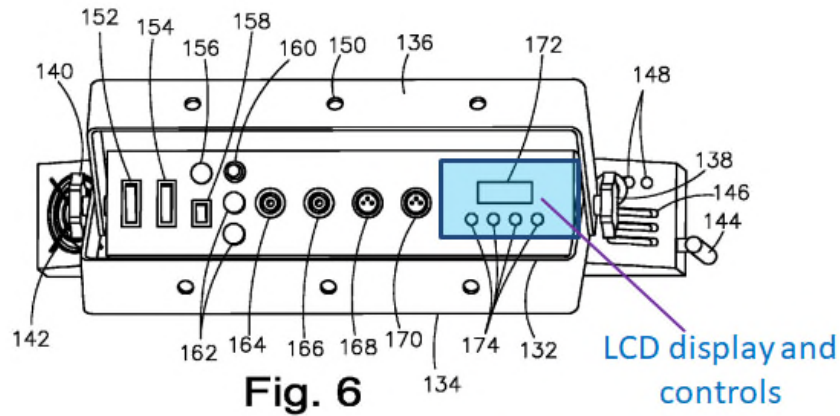
Note: For more information on DMX512 networking and systems, refer to "Additional Resources for DMX512" on page 1. For SL PAR 155 ZOOM RGBW LED Luminaire DMX Mapping, refer to "DMX CONTROL" on page 24.



(Showline Manual, Figure 5 (annotated); see also *id.*10, 24, Figure 13.)

Reinoso, in the same field of art as Showline Manual, discloses that LED light fixtures can communicate over wired *or* wireless communication interfaces using the **DMX** protocol. (Reinoso, Abstract (“A DMX based wireless, light emitting device and system including wireless modules that are battery powered

and wirelessly receive and transmit DMX to other modules or a controller device. The modules can optionally be hard wired to both a DMX signal and external power supply.”.) Similar to the SL PAR units in Showline Manual, each Reinoso lighting module (shown below) includes “RGBW LEDs, electronic dimming, and LED display and function control buttons, and a master/slave synchronization mode.” (3:3-28; 5:21-31.) The Reinoso lighting modules further comprise a “built in receiver/transmitter for wireless DMX operation,” and can communicate via this receiver/transmitter using the wireless DMX protocol. (*Id.*, 3:3-28; 6:39-65.)



(*Id.*, Figures 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's SL PAR units. (Wood Decl., ¶¶ 124-129.) Such would allow for extended communication of signals, without the need to run extensive lengths of cable or run cables in areas that may not be readily accessible, and to reduce the risk of communication faults caused by damaged cables. (Reinoso, 4:36-54; *see also* Wood Decl., ¶ 128.)

Notably, Reinoso discloses that the same DMX512 protocol standard, as disclosed for use in Showline Manual, can be used to implement the wireless communications between LED lighting devices. (Reinoso, 3:3-28; 3:54-4:66.) Thus, 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. (Wood Decl., ¶ 129.) In addition, 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. (Wood Decl., ¶ 129.)

B. Grounds Based on Pohlert

Pohlert is a U.S. patent application that published on February 23, 2012, and is prior art to the '258 under at least 35 U.S.C. § 102(a)(1). Pohlert is directed to a “lighting and effects generation system” (such as shown in Figs. 3A and 3B below) that can include LED lamps in a lighting frame, with a connected and dedicated “power controller.” (Pohlert, Abstract, [0051], [0057]; *see also* Wood Decl., ¶ 131.) 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.

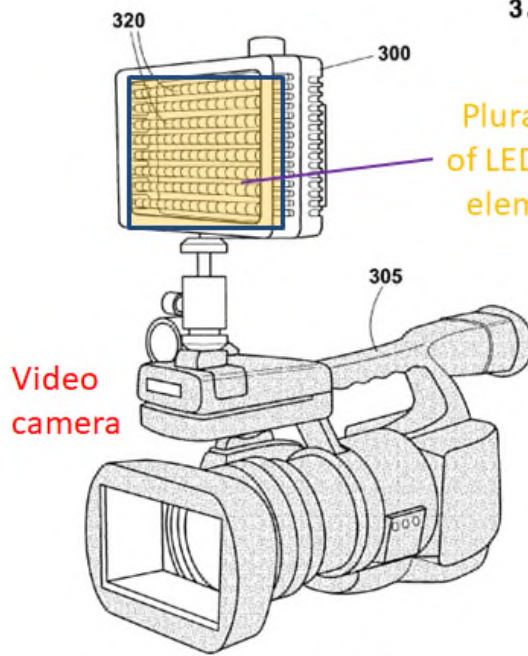


Fig. 3A

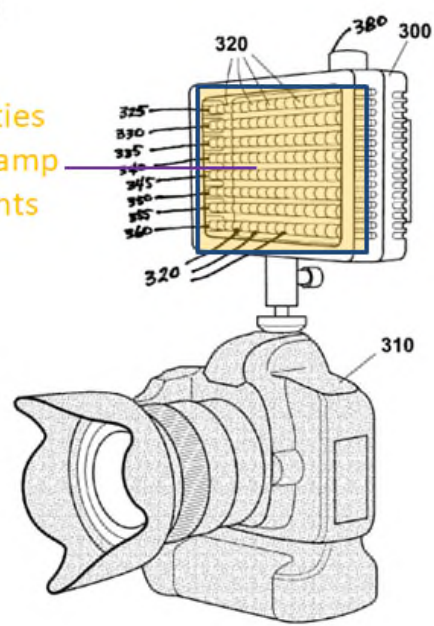
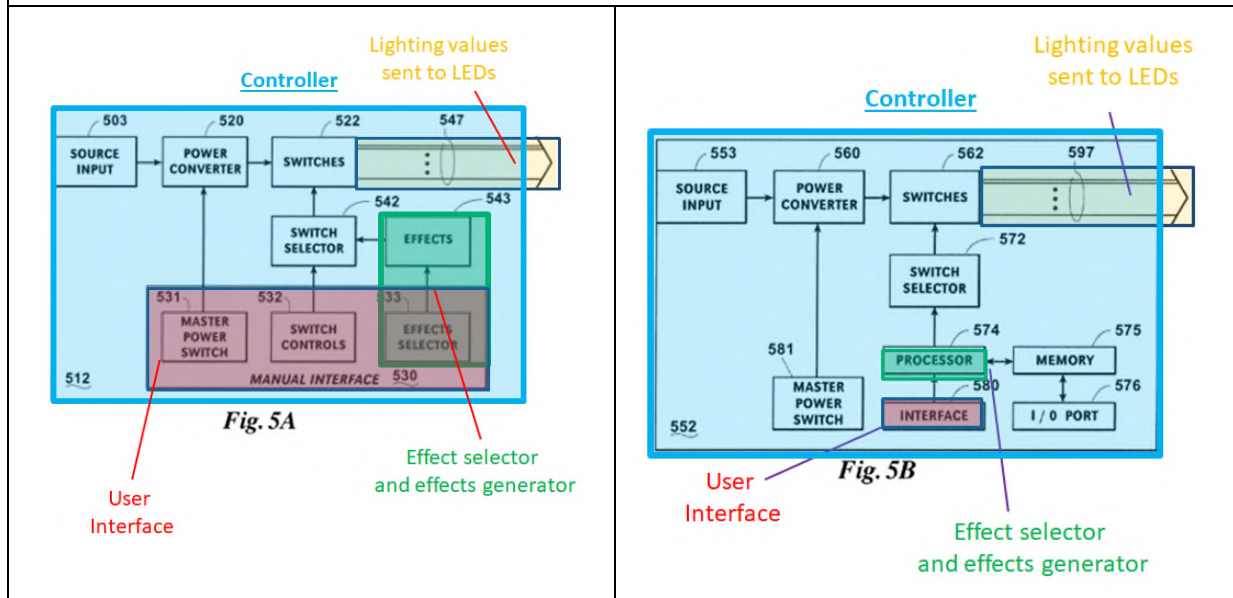


Fig. 3B

(Pohlert, Figures 3A-3B (annotated).)

Example “Power Controllers” Used in Figs. 3A-3B



(Id., Figures 5A-5B (annotated).)

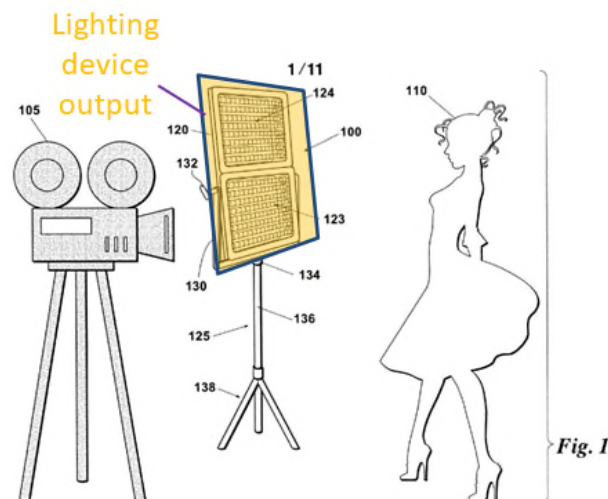
1. **Ground 2 – Pohlert Anticipates or Renders Obvious
Claims 1-22**

Pohlert anticipates Claim 1. (Wood Decl., ¶ 132.)

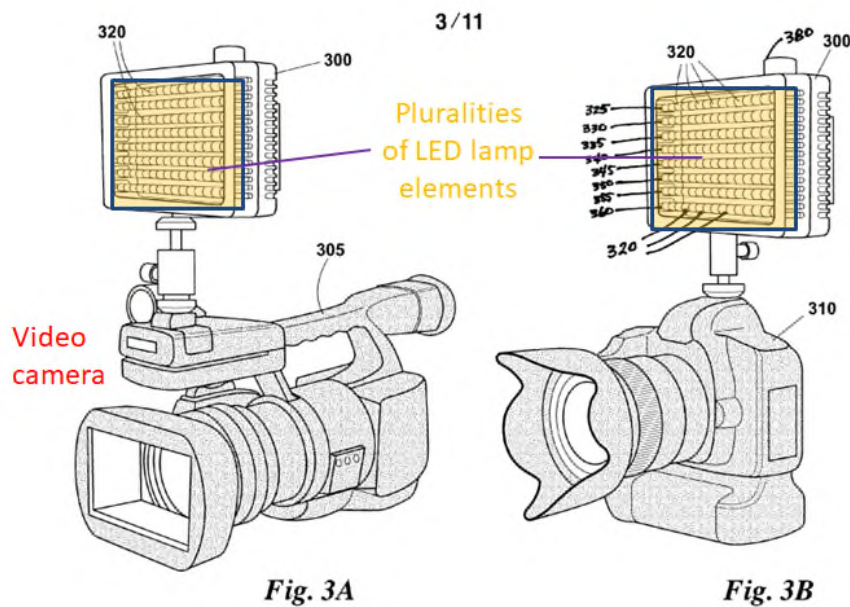
a. **Independent Claim 1**

Claim 1p: A lighting system comprising:

Pohlert discloses Claim 1p. (Wood Decl., ¶ 133.) Pohlert discloses a lighting system having LED “light panels” controlled by a “power controller,” with such controller having a user interface enabling a user to select and modify lighting special effects, such as patterns of strobing, flashing, and dimming and brightening the lights. (Pohlert, Abstract, [0020], [0050], [0063], [0067].) The lighting system “can provide a variety of lighting patterns, including programmable patterns by which individual or groups of lights can be controlled for different lighting effects.” (*Id.*, [0103].) This lighting system can be used to provide illumination for “a subject during video photography.” (*Id.*, [0020].)



(*Id.*, Figure 1 (annotated).)

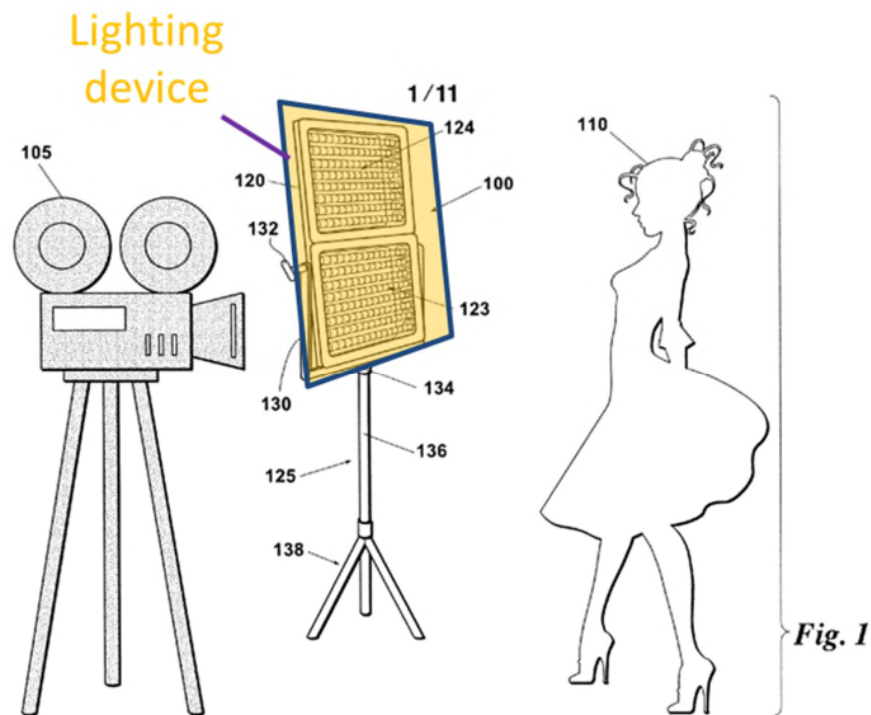


(*Id.*, Figures 3A-3B (annotated).)

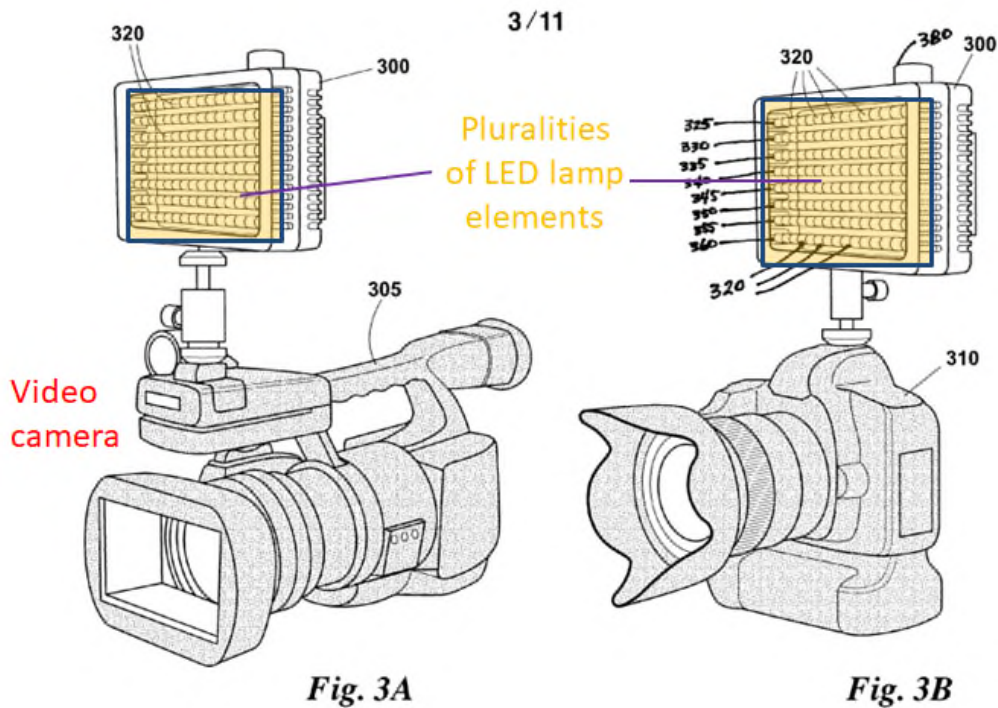
Claim 1a: a lighting device;

Pohlert discloses Claim 1a. (Wood Decl., ¶ 134.) The Pohlert lighting system includes “a light panel having a panel frame and a plurality of LEDs or other light elements secured to the panel frame.” (Pohlert, Abstract.) More specifically, Pohlert discloses that 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.*, [0050].) The LED lamps are “lighting devices” that provide “illumination” and

desired effects, such as a “flash or strobe,” during video capture or still photography. (*Id.*, [0020]-[0021], [0050]-[0053], [0057].)



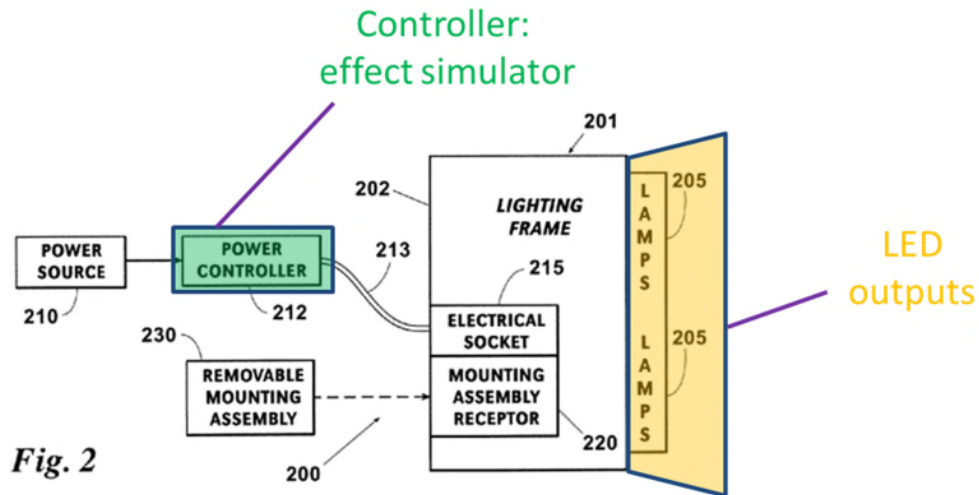
(*Id.*, Figure 1 (annotated).)



(*Id.*, Figures 3A-3B (annotated).)

Claim 1b: *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:*

Pohlert discloses Claim 1b. (Wood Decl., ¶¶ 135-140.) In Pohlert, the LED lamps are “controlled by a **power controller 212** such as is generally shown in FIG. 2a.” (Pohlert, [0057].) Figures 5A and 5B in Pohlert show two examples of power controllers in more detail. (*Id.*, [0058]-[0067].)



(*Id.*, Figure 2 (annotated).)

The power controller sends signals to the lighting elements to produce different special effects that can be captured by, for example, a “motion picture-type camera.” (*Id.*, [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. These selections are then converted into control signals sent to the LED lamps. (*Id.*, [0057]-[0059], [0061], [0063], [0067]; Figures 2, 5A-5B.) A user can “customize” the effects by selecting different combinations of patterns or adjusting the controls for dimming or brightening individual or groups of LEDs. (*Id.*, [0061]-[0063], [0067].)

Claim 1c: *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*

Pohlert discloses Claim 1c. (Wood Decl., ¶¶ 141-145.) The Pohlert “power controllers” include a user interface, enabling a user to choose combinations of

special effects, including patterns, strobing, flashing, dimming and brightening.

(Pohlert, [0059], [0066], Figures 5A, 5B.)

In the **Figure 5A** controller (shown below), a “**manual interface 530** is provided to allow operation of the switches 522 according to manual selection. The manual interface 530 may include a master power switch 531, switch controls 532, and, optionally, an effects selector 533. The switch controls 532 may include an individual manual switch, button or other selection means for each individual switch provided in the set of switches 522, or else may comprise a control mechanism (such as knob or reduced number of manual switches, buttons or other selection means) for selecting groups of switches 522 according to predesignated arrangements.” (*Id.*, [0059] (emphasis added).)

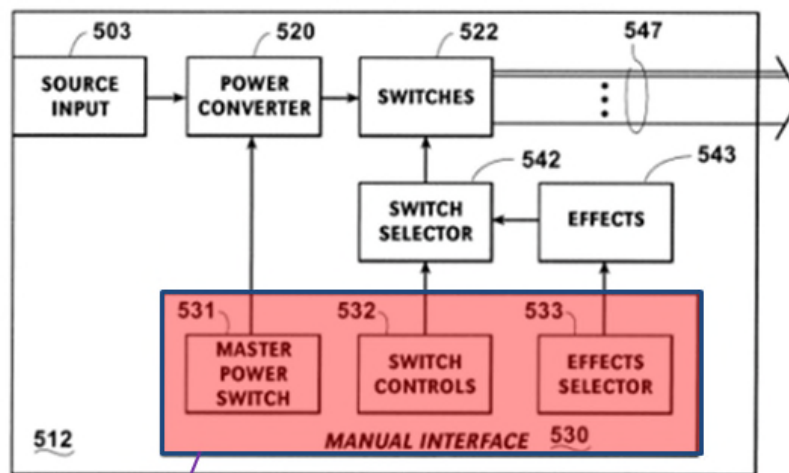


Fig. 5A

User
Interface

(*Id.*, Figure 5A (annotated).)

Selections made by the user are sent to an “effects generator 543,” which provides “the ability to create various lighting effects, such as, e.g., dimming, strobing, pulsation, or pattern generation.” (*Id.*, [0061].) For example, the effects selector in the user interface allows a user to adjust frequency of the “strobing” effect “through a knob, switch or other selection means.” (*Id.*, [0062].) Moreover, the controller can accomplish the selected “pattern generation” by “manual selection from a number of predefined patterns, or else through an interface allowing different pattern sequencing.” (*Id.*, [0063].) The patterns a user can select through the user interface include “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.*)

Similarly, the controller in **Figure 5B** includes “**an 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.” (*Id.*, [0066].)

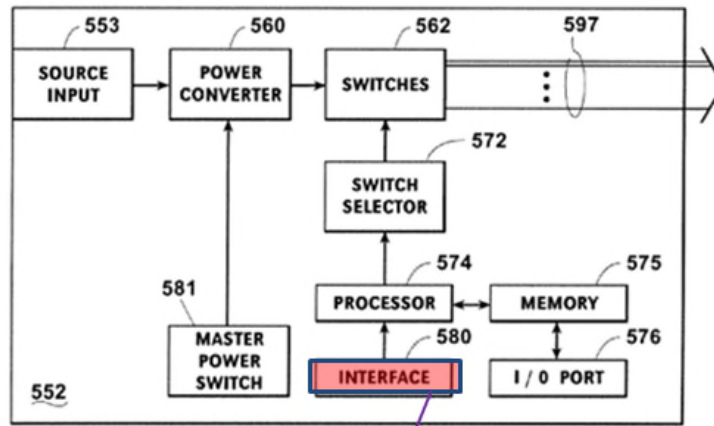


Fig. 5B

User
Interface

(*Id.*, Figure 5B (annotated).)

Selections made through the Figure 5B 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.*, [0067].) In particular, the 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, 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.*)

Claim 1d: an effect simulator adapted to calculate a time varying lighting value based on at least one simulation parameter,

Pohlert discloses Claim 1d. (Wood Decl., ¶¶ 146-153.) In Pohlert, 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 the desired light output. (*Id.*, [0059], [0061]-[0062], [0065]-[0067]; *see also* Wood Decl., ¶¶ 146-153.) These power control signals provide time-varying signals for “controlling the intensities” of the LEDs to generate the desired light output patterns and effects. (*Id.*, *see also id.*, [0050]-[0051].) Moreover, these power controls 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.*, [0051], [0061]-[0063], [0066]-[0067], [0089]-0091].)

For example, Pohlert discloses that 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. (Wood Decl., ¶ 148; *see also* Pohlert, [0062].) Pohlert further discloses that 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.*, [0062].) In simple terms, adjusting the oscillation frequency

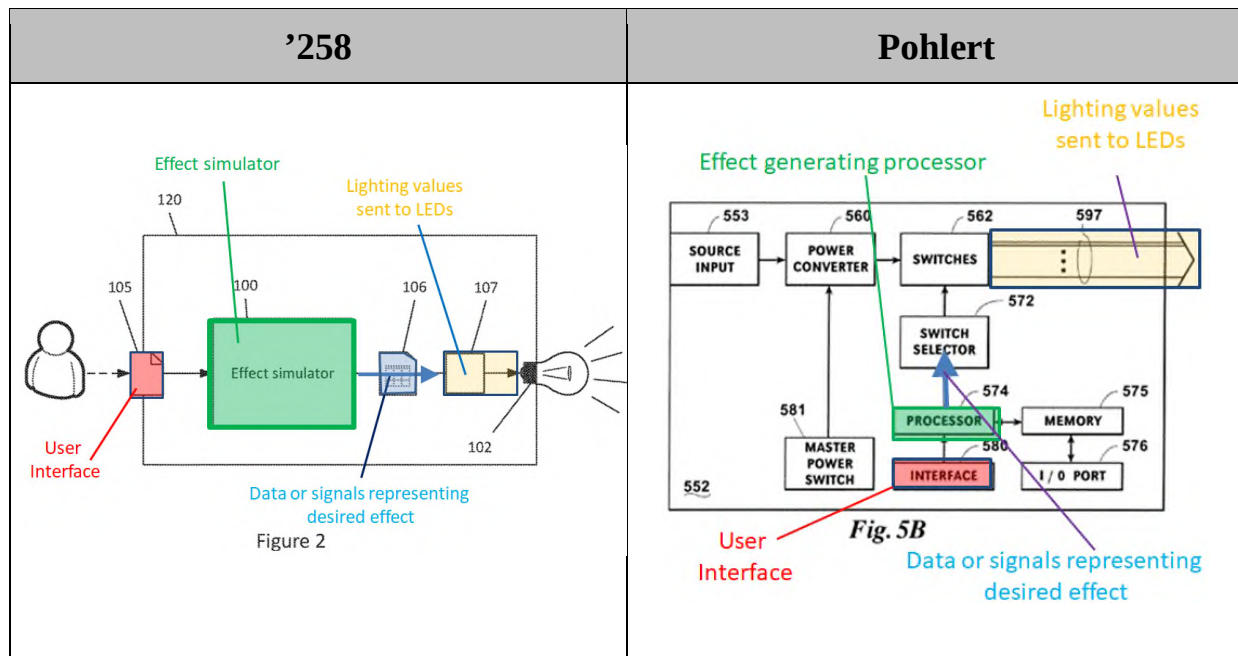
causes the controller to calculate and create a new output time varying power control signal, changing the frequency of the strobe effect output by the LEDs. (Wood Decl., ¶ 148.)

As another example, 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. (Wood Decl., ¶ 149; *see also* Pohlert, [0063], [0067].) The brightness and frequency of these light effect patterns 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. (*Id.*, Pohlert, [0063], [0067].)

And, as a final example, to adjust the color or color temperature of the LEDs, Pohlert teaches that 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.*, [0088]; *see also id.*, [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.*, [0089]; *see also id.* [0090]-[0091]; Wood Decl., ¶ 150.)

The generation and output of control signals, or time varying lighting values, representing the desired effect, as disclosed in Pohlert, is strikingly similar to the effect simulator and output lighting values disclosed in the '258:



(Compare, e.g., '258, Figure 2 (annotated) with Pohlert, Figure 5B (annotated); *see also* Pohlert, Figure 5A.)

Claim 1e: *said at least one simulation parameter depending on the selected user customisable cinematic lighting special effect being simulated,*

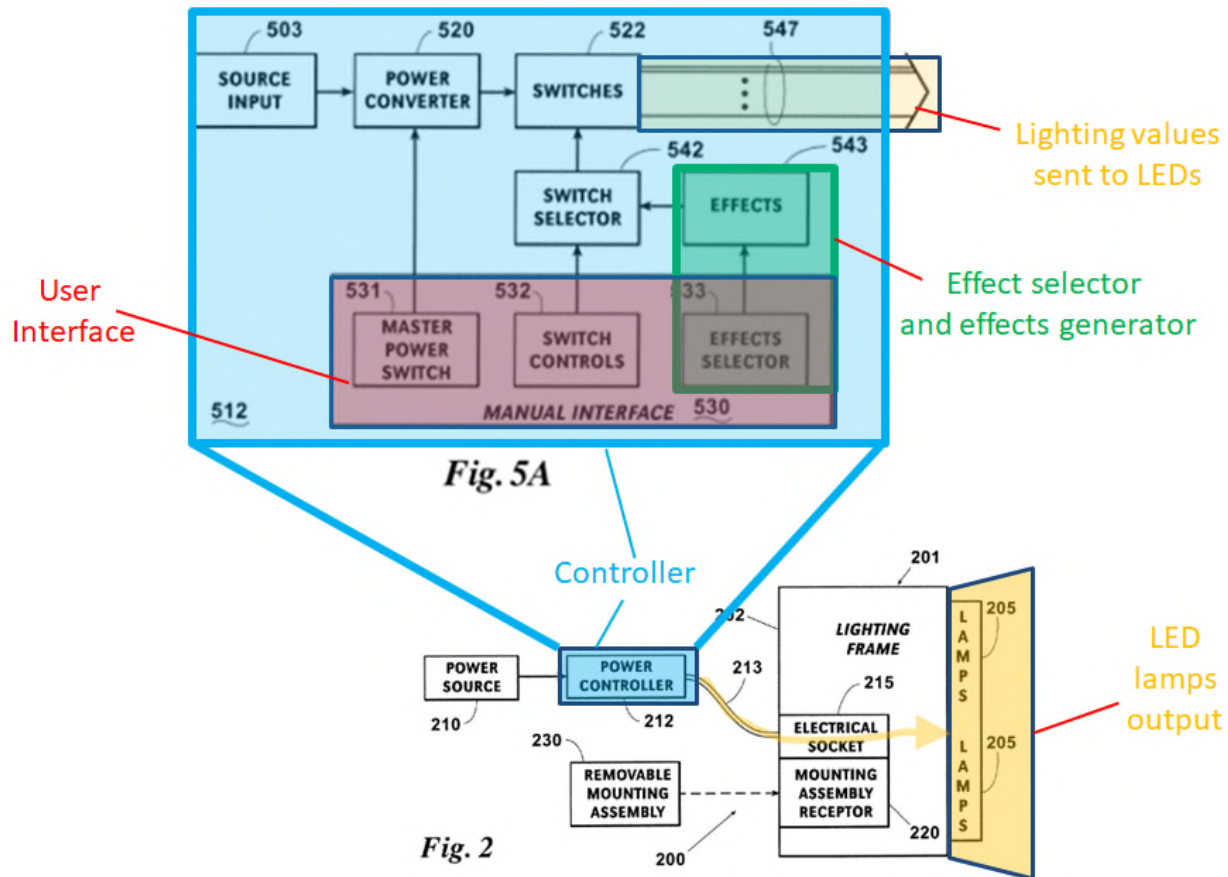
Pohlert discloses Claim 1e. (Wood Decl., ¶ 154.) Pohlert discloses that the “simulation parameters” depend on the user-selected customizable lighting effects selected through the user interface on the power controller. *See supra* Claims 1c-1d. For example, as discussed above, Pohlert discloses “strobing” effects and light

“pattern” effects used in “photography, film, television, and other applications.” (Pohlert, [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.*, [0061]-0063], [0066]-[0067].) That is, the adjustment parameter for the “frequency” of strobing is directly related to a user selecting to produce a strobing effect. (Wood Decl., ¶ 154.) Similarly, 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 first selecting to generate a pattern effect on the user interface. (Pohlert, [0063], [0067].)

Claim 1f: *[said effect simulator]... adapted to output said time varying lighting value to said lighting device so as to simulate the selected user customisable cinematic lighting special effect;*

Pohlert discloses Claim 1f. (Wood Decl., ¶ 155.) Pohlert discloses its “power controller” sends control signals through wires supplying power to light elements, causing the light elements to simulate the user’s selected effect. *See supra* Claims 1b-1d. In particular, 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. (Pohlert, [0058]-[0059] (“The power converter 520 is preferably connected to a plurality of switches 522 ... each switch controlling power delivered by the power converter

520 to one of the wires 547 output by the power controller 512. ... The switch selector 542 would then 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.”.)



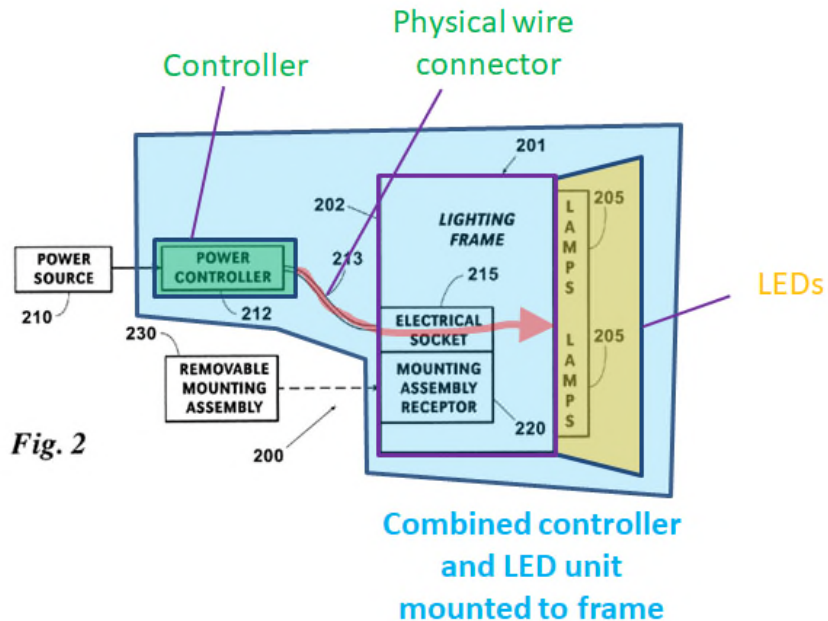
Combined LED lighting device and dedicated, connected controller

(Id., Figures 2, 5A (annotated); see also Figure 5B.)

Claim 1g: wherein said lighting device and said controller are integrated in a combined unit.

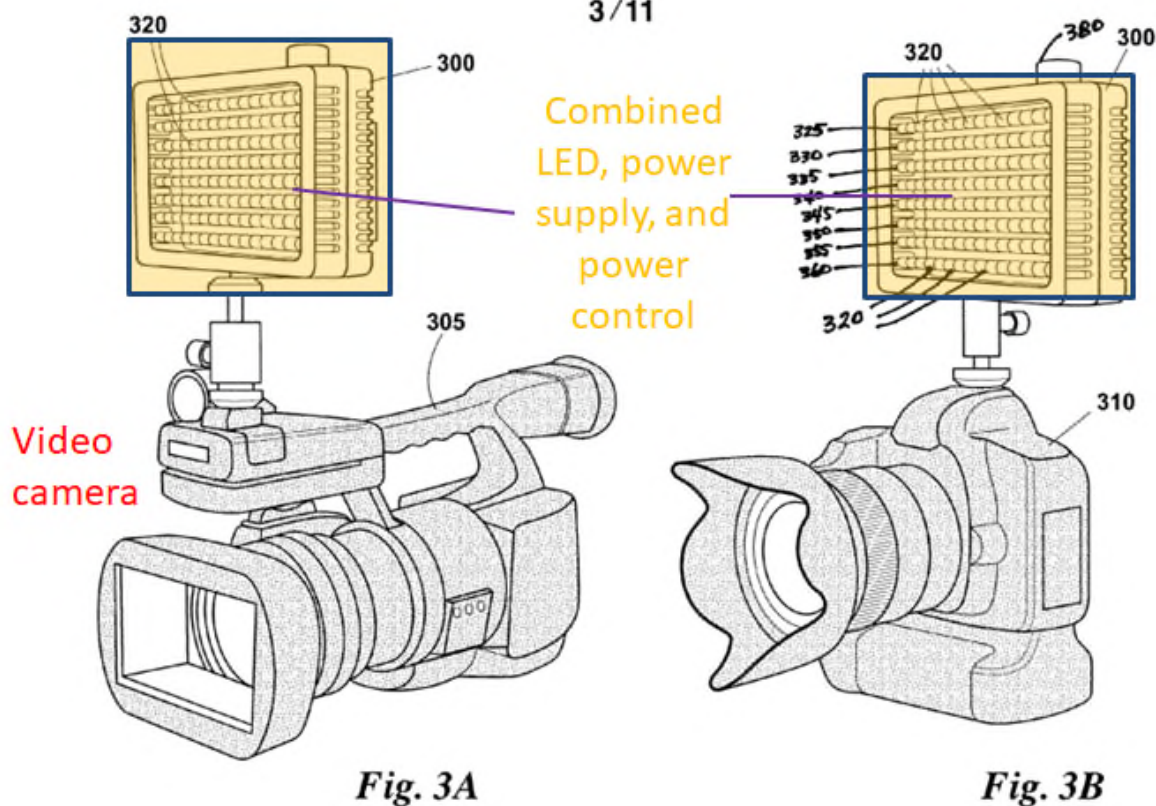
Pohlert discloses Claim 1g. (Wood Decl., ¶¶ 156-159.) The Pohlert lighting system includes a power controller and LED lamps physically connected and

combined into one device. (Pohlert, [0020], [0050]-[0051].) As shown in Figure 2 below, the “power controller” can be physically connected by a cable to the lighting elements on the lighting frame, making them one combined unit:



(*Id.*, Figure 2 (annotated).)

Pohlert also discloses that the “power source 210” in Figure 2 (above) may be either “a standard electrical outlet” or “a battery having sufficient current to drive the LEDs.” (*Id.*, [0057].) Where a battery is used, “the light panel and self-contained battery unit function as an integrated lighting apparatus.” (*Id.*, [0018].) Similarly, as shown in Figures 3A-3B below, the lighting system may be a stand-alone unit mounted to a video or photography camera:



(*Id.*, Figures 3A, 4B (annotated); *see also id.*, [0094].) Pohlert also discloses that the LEDs and controller may be mounted to a camera or a frame, and may be “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.*, [0024], [0050]).

b. Dependent Claim 2

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.*

Pohlert anticipates Claim 2. (Wood Decl., ¶ 160.) A user can input selections through the user interface in the “power controller” to request and customize effects, including patterns, strobing, flashing, dimming, brightening, and combinations thereof. *See supra* Claims 1c-1d. For example, with respect to strobing, Pohlert discloses that the strobing “may be accomplished by generating an oscillating signal and applying it as a control signal either upstream or downstream from the switch selector 542,” with the frequency of oscillation being “selectable via a manual knob, switch or other selection means as part of the effects selector 533.” (Pohlert, [0062].) Thus, user inputs to change the oscillation frequency allow customization of the strobing effect, with a higher oscillation frequency causing more frequent flashes. (Wood Decl., ¶ 160.)

c. Dependent Claims 3, 4, 5

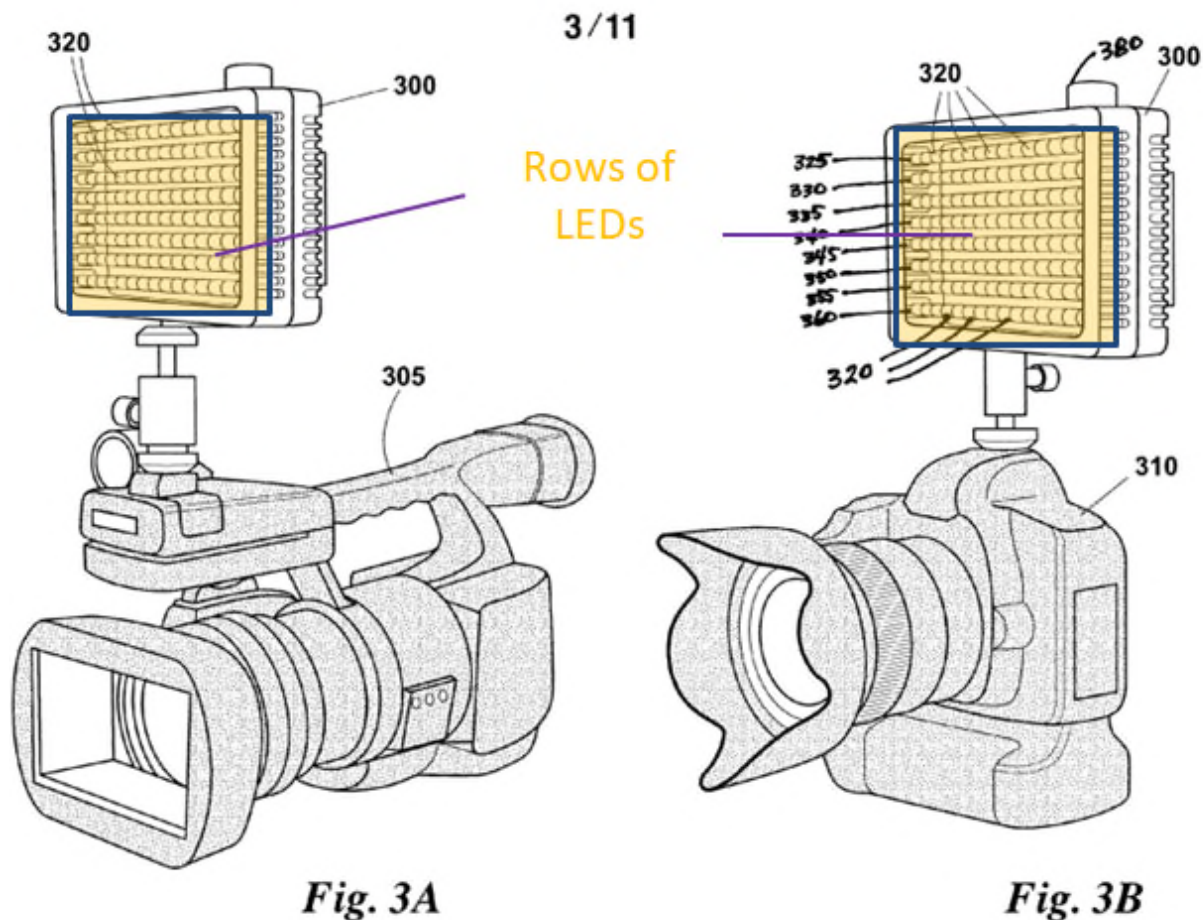
Claim 3: *The lighting system according to claim 1, wherein the lighting device comprises at least one LED.*

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.*

Pohlert anticipates Claims 3-5. (Wood Decl., ¶¶ 161-162.) The lamp elements in Pohlert can include multiple LEDs, such as the plurality of lamp segments 320 in Figures 3A-3B (appended below), which LEDs can be “red,

green, and blue LEDs.” (Pohlert, [0081], [0084].) Similarly, Pohlert teaches that its lamp elements may comprise “high output LEDs” that “are available in white as well as colors such as green, blue, red, amber, and cyan.” (*Id.*, [0111].)



(*Id.*, Figures 3A, 3B (annotated).)

d. Dependent Claim 6

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.*

Pohlert anticipates Claim 6. (Wood Decl., ¶¶ 163-164.) Pohlert discloses that with its lighting system, selective combinations of RGB LEDs can be used to “generate virtually any desired color.” (Pohlert, [0084].) Pohlert also discusses control of “color temperature,” and refers to color temperatures of “tungsten” for light in the range of 2000-4200° Kelvin and “daylight” for temperatures in the range of 4200-9500° Kelvin. (*Id.*, [0049].)

To adjust the color or color temperature of the LEDs, Pohlert teaches that 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.*, [0088]; *see also id.*, [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.*, [0089]; *see also id.*, [0090]-[0091]; Wood Decl., ¶ 164.)

e. Dependent Claim 7

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.*

Pohlert anticipates or renders obvious Claim 7. (Wood Decl., ¶¶ 165-166.) The ’258 describes “warm” white LEDs as LEDs having temperatures including 2800 Kelvin and “cool” white LEDs as LEDs having temperatures including 7000

Kelvin. ('258, 8:54-64.) Pohlert discloses that its 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. *See supra* 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. (Wood Decl., ¶¶ 165-166.)

f. Dependent Claim 8

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.*

Pohlert anticipates Claim 8. (Wood Decl., ¶ 167.) Pohlert discloses that its 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”) (Pohlert, [0049]), thus covering an overall color temperature range between 1000-9500° Kelvin. *See supra* Claim 6.

g. Dependent Claim 9

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.*

Pohlert anticipates Claim 9. (Wood Decl., ¶ 168.) As discussed, Pohlert discloses that its user interface can be used to generate different patterns or effects. *See supra* Claim 1d. Moreover, Pohlert specifically teaches that these effects, generated by the “power controller,” can include “gradually dimming or brightening” the LED elements—*i.e.*, controlling their brightness.” (Pohlert, [0063], [0067]; *see also id.*, [0050] (“control circuitry may be provided for controlling the intensities of the various lamp elements, either collectively, individually, or in designated groups, and, in some embodiments, through pre-programmed patterns.”).)

h. Dependent Claim 10

Claim 10: *The lighting system according to claim 1, wherein the simulation parameter comprises at least one of a colour and a colour temperature.*

Pohlert anticipates Claim 10. (Wood Decl., ¶ 169.) Pohlert discloses that the user-selectable simulation parameters include color and color temperature. *See supra* Claims 6, 8. 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. (Pohlert, [0087].) In particular, through “intensity control” and “ratio control” adjustments made 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 overall color output. (*Id.*, [0088]; *see also id.*, [0089]-[0092].)

i. Dependent Claim 11

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.*

Pohlert anticipates or renders obvious Claim 11. (Wood Decl., ¶¶ 170-171.)

Pohlert discloses that its effects and patterns include “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.*, [0063]; *see also id.*, [0062], [0067].) Thus, Pohlert explicitly discloses one of its effects includes “flashes (strobe).” (Wood Decl., ¶ 170.)

Moreover, a POSITA would understand that the pattern generation and sequences (*id.*, [0063], [0067], [0081]) can produce additional claimed effects, such as those that mimic lightning, welding, and sparking. (Wood Decl., ¶ 171.) For example, the “pseudo-random sequences” of flashes or strobes in Pohlert result

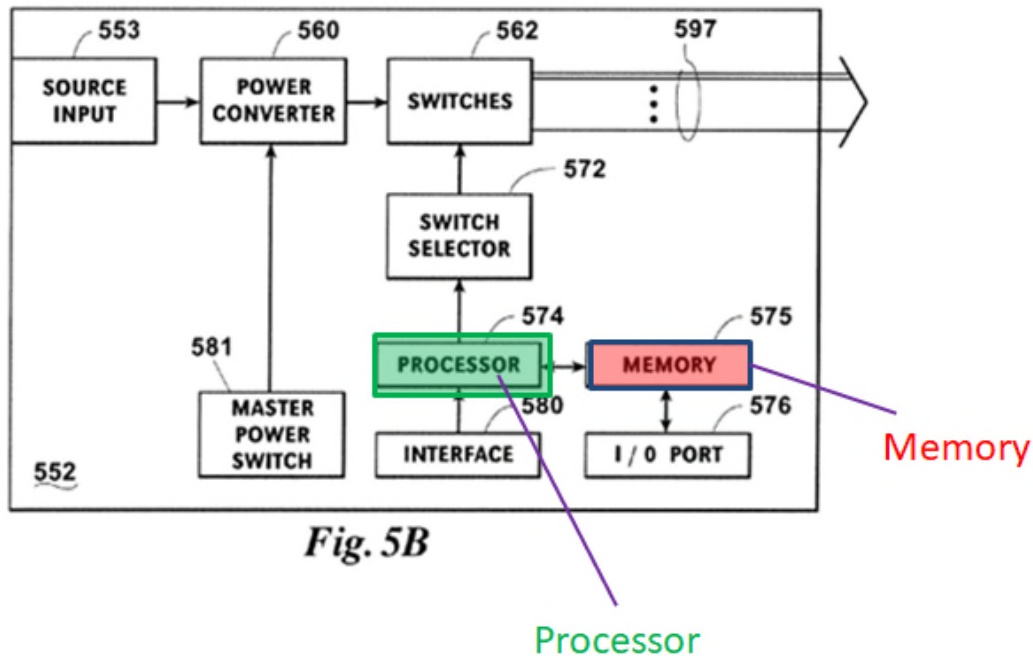
in irregularly-timed light, which a POSITA would understand can produce random flashes of light simulating lightning, welding, and sparking effects. (*Id.*)

j. Dependent Claims 12 and 21

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 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.*

Pohlert anticipates Claims 12 and 21. (Wood Decl., ¶ 172.) Pohlert discloses a memory storing programming instructions, which comprise the “simulation parameters” for the varying power control signals to the LED elements to implement the user-selected effects. (Pohlert, [0066]-[0067].) For example, Pohlert discloses that the processor in the Figure 5B “power controller” interfaces with a memory (shown below), and “reads instructions from the memory 575 and executes them in a conventional manner. The instructions will generally cause the processor 574 to control the switch selector by, e.g., setting various digital values in registers whose outputs control the switches 562. The programming instructions may also provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation, for example.” (*Id.*, [0067].)



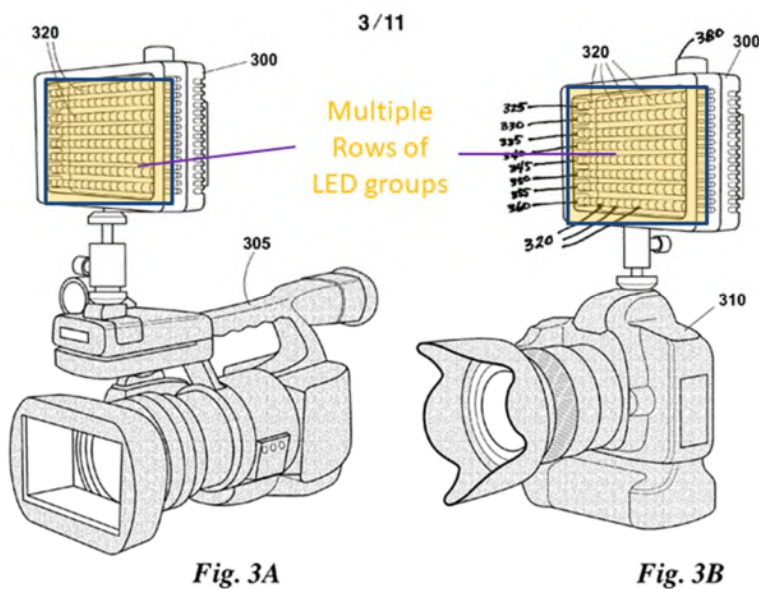
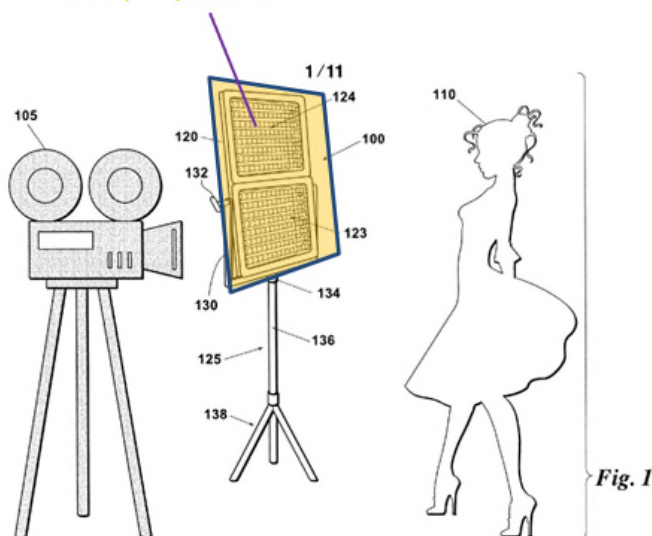
(*Id.*, Figure 5B (annotated).)

k. Dependent Claim 13

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.*

Pohlert anticipates Claim 13. (Wood Decl., ¶¶ 173-175.) Pohlert’s controller 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.” (Pohlert, [0050]; *see also id.* [0053], [0059], [0067].)

Multiple lighting
elements in
multiple panels



(*Id.*, Figures 1, 3A, 3B (annotated).)

More specifically, Pohlert’s lighting system may include “multiple panel light sections 123, 124” (*id.*, [0053]), and as shown in Figures 3A-3B, the lighting arrangements are controlled by the controller to produce effects using multiple

light segments. (*Id.*, [0059].) For example, 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.*, [0067].)

Moreover, Pohlert discloses “slave flashes” that can be controlled by radio frequency, infrared, and optical signals (including flashes from the LEDs controlled by the controller). (*Id.*, [0022]-[0023].) Pohlert discloses that these may be “optical slave flashes” that are “triggered by light,” including light pulses from another device. (*Id.*, [0023].) Pohlert notes that 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. (Wood Decl., ¶ 175.) Thus, each of

these slave flashes are also a “lighting device” triggered by the LEDs controlled by the controller to produce desired lighting effects. (*Id.*)

I. Dependent Claim 14

Claim 14: *The lighting system according to claim 1, further comprising a further lighting device, said further lighting device being separate from said controller.*

Pohlert anticipates or renders obvious Claim 14. (Wood Decl., ¶ 176-177.)

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. *See supra* Claims 1c, 1f. 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. (Pohlert, [0113] (“[A] lighting apparatus kit may include one or more lighting panels 702, as well as one or more battery units 830 (and/or battery adapters such as described previously herein), power jumper cable (for connecting the power between the panel(s) 702 and battery unit(s) 830...”).) At least the panels not directly connected to the controller included with the battery power supply are separate from it. (Wood Decl., ¶ 176.) 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).” (Pohlert, [0113]; *see also* Wood Decl., ¶ 176.) 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. (*Id.*)

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 supra* 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. (Wood Decl., ¶ 177.)

m. Dependent Claim 15

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.*

Pohlert anticipates or renders obvious Claim 15. (Wood Decl., ¶¶ 178-179.) Pohlert discloses that the Figure 5B controller includes an “I/O port” (shown below) that may be wireless (infrared) for obtaining digital information. (Pohlert, [0066].) 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.*, [0022].) Pohlert states its lighting effects and generation system, which includes the power controllers, is “particularly well suited for use with such optical, IR or RF slave flash systems.” (*Id.*, [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. (Wood Decl., ¶ 179.) 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. (*Id.*, ¶ 179.)

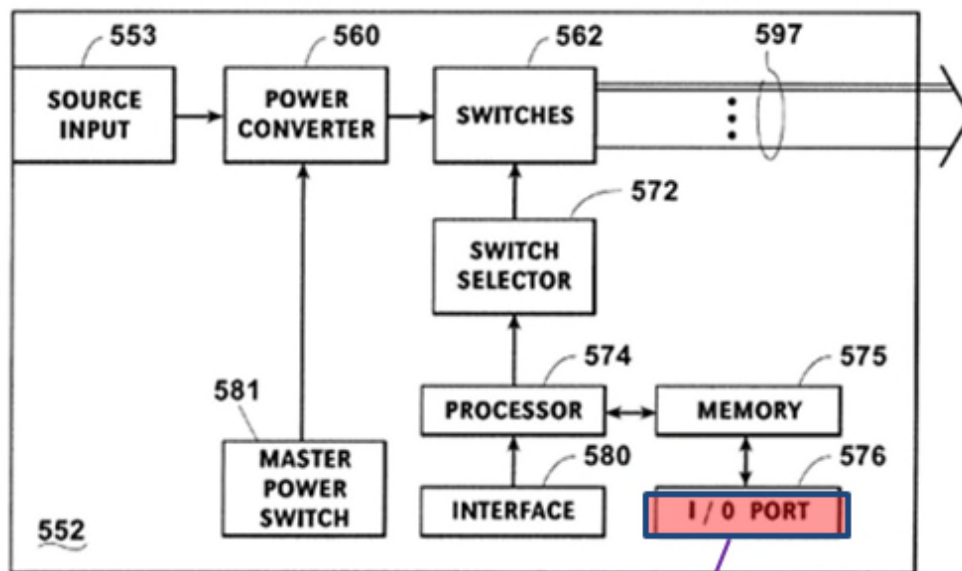


Fig. 5B

Input/output
port

(Pohlert, Figure 5B (annotated).)

n. Dependent Claim 16

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.*

Pohlert anticipates Claim 16. (Wood Decl., ¶¶ 180-182.) Pohlert discloses that its “power controller” can individually control groups of light elements to generate selected predetermined patterns. ([Pohlert, [0063], [0067].) 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). (Wood Decl., ¶ 180-182.) In particular, Pohlert discloses “strobing or flashing different groups of light segments 325, 330, 335, 340, 345, 350, 355, and 360 (given the example of FIG. 3B) 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.” (Pohlert, [0063]; *see also id.* [0067].)

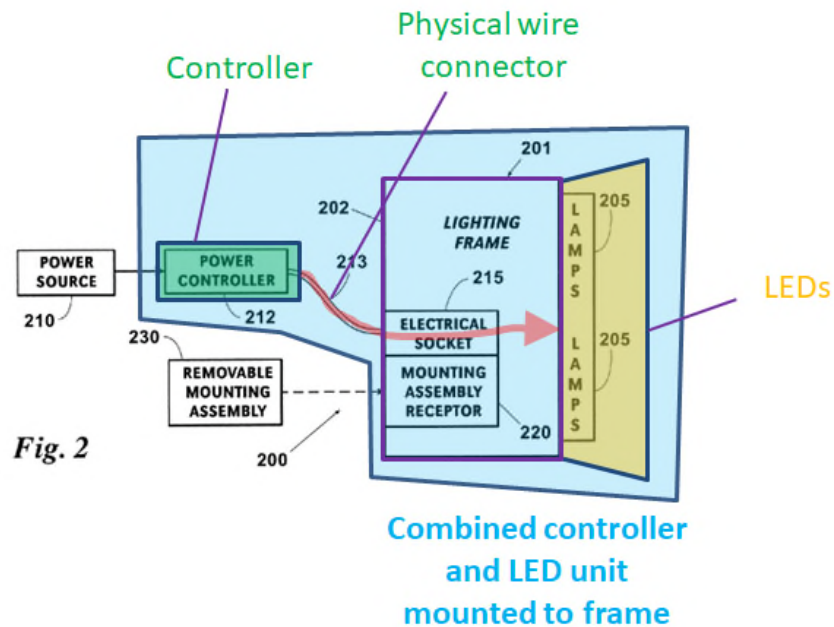
By strobing, flashing, or gradually dimming or brightening the different groups of light elements as described, the generated effect would be one of a moving light. (Wood Decl., ¶ 181.) For example, strobing the rows of LEDs

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.*, *see also* Pohlert, Figures 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. (Wood Decl., 181-182.) Similarly, 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.*, ¶ 181-182.)

o. Dependent Claim 17

Claim 17: *The lighting system according to claim 1, wherein the controller is separable from the lighting device.*

Pohlert anticipates Claim 17. (Wood Decl., ¶ 183.) Pohlert discloses that the power controller is connected to the lighting frame containing the LED lamps by a cable 213. (Pohlert, [0058].) The cable is “for connection” of the power controller “to the lighting frame.” (*Id.*) As such, the power controller is “separable” from the lighting device when the cable is disconnected from the electrical socket 215 (shown below). (Wood Decl., ¶ 183.)



(Pohlert, Figure 2 (annotated).)

p. Dependent Claim 18

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.*

Pohlert anticipates Claim 18. (Wood Decl., ¶ 184.) Pohlert discloses that the user interface in the Figure 5A and 5B controllers can include dials, control panels, and buttons. See *supra* Claim 1c.

q. Dependent Claim 19

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.*

Pohlert anticipates Claim 19. (Wood Decl., ¶¶ 185-189.) 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 supra* Claims 1f (discussing switches and switch selector), 6 (discussing intensity and ratio control circuits).

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.” (Pohlert, [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.*, [0066].)

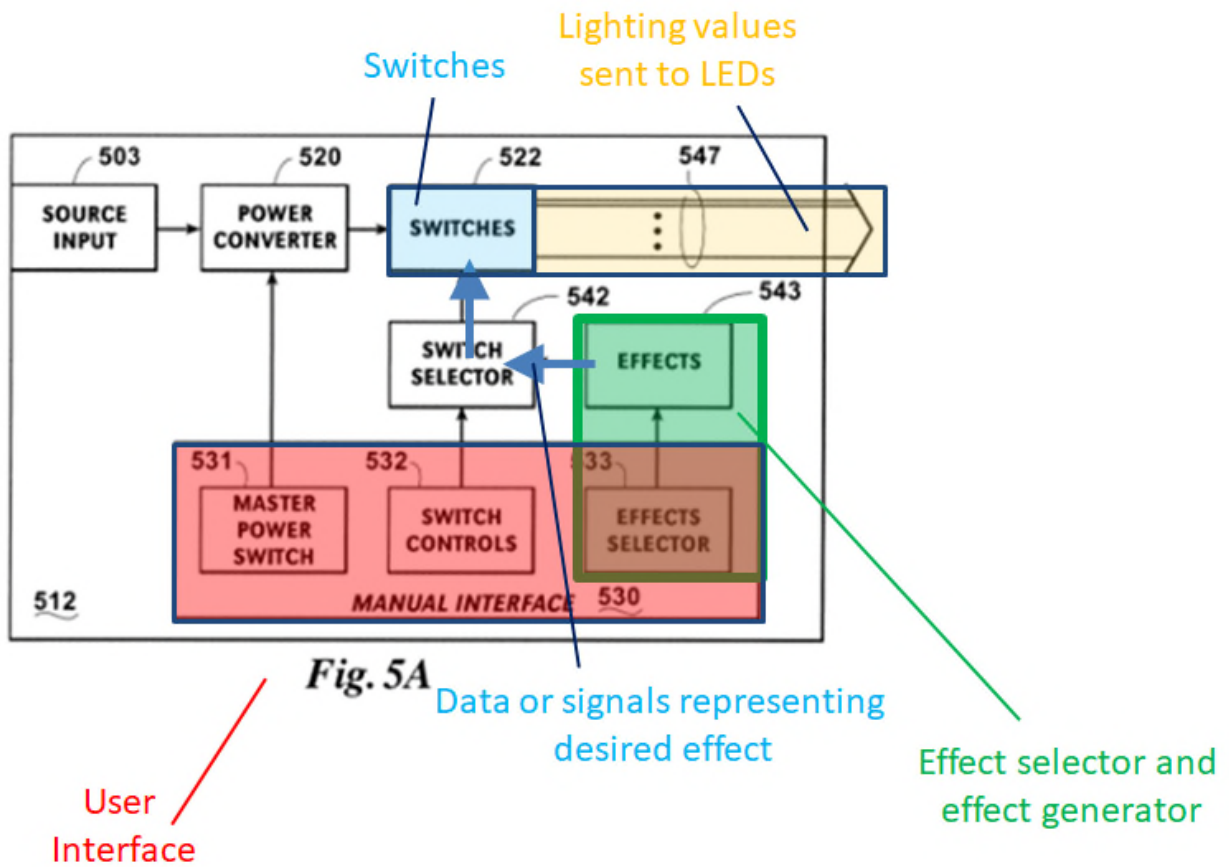
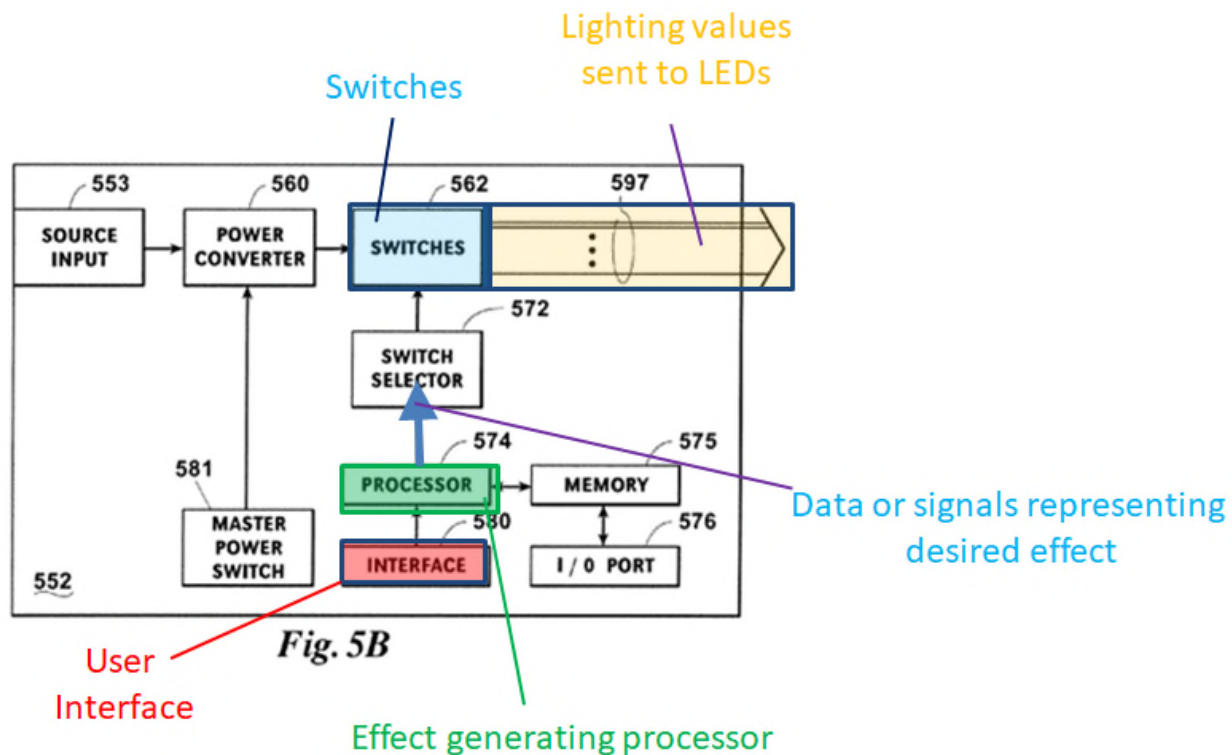


Fig. 5A

(Id., Figure 5A (annotated).)



(*Id.*, Figure 5B (annotated).)

Control of the switches provides for the “pattern generation” to produce effects, such as changes in brightness. (*Id.*, [0063], [0066]-[0067]; *see also* Wood Decl., ¶¶ 186-188.) For example, 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).” (Pohlert., [0067].)

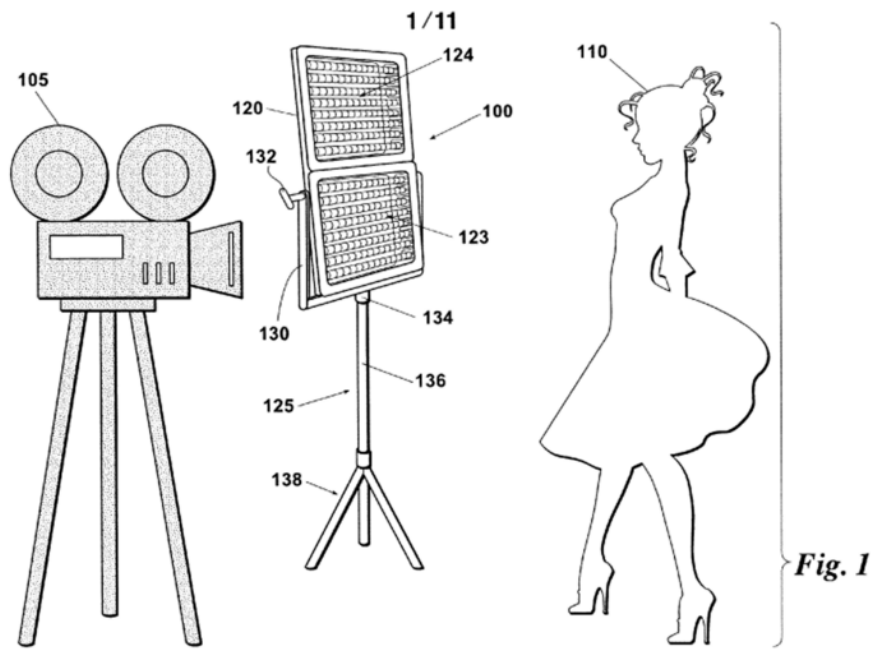
Further, with respect to color signals, as discussed above with respect to claims 6 and 8, Pohlert discloses intensity control circuits and ratio control circuits

that modify the power supply to each LED to generate the desired light. (*Id.*, [0089]-[0091].) That is, 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.* (“The intensity control circuit 1052 and ratio control circuit 1046 may comprise analog and/or digital circuitry, and the output of the ratio control circuit 1046 modifies the incoming power supply separately for the daylight LEDs 1004 and the tungsten LEDs 1003 in a manner dictated by the setting of the ratio control adjustment 1041.”).)

r. Dependent Claim 20

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.*

Pohlert anticipates Claim 20. (Wood Decl., ¶¶ 190-191.) The Pohlert lighting system is for “photography, film, television, and other applications.” (Pohlert, [0003], [0005].) Further, Figure 1 illustrates the use of Pohlert’s lighting and effects generation system with a video camera that may be “a motion picture-type camera.” (*Id.*, [0052].)



(*Id.*, Figure 1.)

s. Dependent Claim 22

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.*

Pohlert anticipates Claim 22. (Wood Decl., ¶ 192.) Pohlert discloses that a plurality of light elements, 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 supra Claim 14.

IX. CONCLUSION

ARRI respectfully requests that a Trial be instituted. Claims 1-22 of the '258 should be cancelled as anticipated or obvious over the prior art.

Dated: September 3, 2021

Respectfully submitted,

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APPENDIX A
Table of Exhibits

Exhibit No.	Description
1001	U.S. Patent No. 10,197,258 (<i>Challenged Patent</i>)
1002	File History for the '258 Patent
1003	U.S. Patent Application Publication No. 2012/0044374 (Pohlert)
1004	The Showline Manual
1005	U.S. Patent No. 8,632,208 (Choong)
1006	U.S. Patent No. 8,581,513 (Reinoso)
1007	American National Standard E1.11 – 2008 (2013), Entertainment Technology USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories, ANSI (2017)
1008	Declaration of Mr. Michael Wood
1009	Curriculum Vitae of Mr. Michael Wood
1010	Declaration of Mr. Martin Palmer

APPENDIX B
Certificate of Word Count

I certify that, in accordance with 37 C.F.R. § 42.24(d), the word count for the foregoing Petition totals 13,715. This is less than the permitted total under the 37 C.F.R. 42.24(a)(1)(i).

/s/ Joseph J. Raffetto
Joseph J. Raffetto (Reg. No. 66,218)
*One of the attorneys for Petitioner Arnold &
Richter Cine Technik GmbH & Co. Betriebs KG*

APPENDIX C
Certificate of Service

I certify that on September 3, 2021, a copy of this Petition and supporting documents were served on Patent Owner via Federal Express at the following address:

PRTSI Inc.
232 NW 42nd Ter
Plantation FL 33317

/s/ Joseph J. Raffetto
Joseph J. Raffetto (Reg. No. 66,218)
One of the attorneys for Petitioner
Arnold & Richter Cine Technik GmbH & Co.
Betriebs KG