

U.S. Patent No. 10,566,895 vs Quasar S-Switch Lights

The Accused Products include the specific model numbers in these claim charts and other models with the same or substantially the same names and functionality. As used in the charts, the phrase “Accused Products” includes the following products based upon the asserted claim.

Claim	Quasar S-Switch Products
1 3 (on 1) 6 (on 1)	S-Switch (bicolor) models Q15W3056SG, Q15W3056SG-240, Q25W3056SG, Q25W3056SG-240, Q25W3056S2, Q50W3056SG, Q50W3056SG-240, Q50W3056S2, Q50W3056S2-240, Q75W3056SG-240, Q75W3056SG, Q100W3056G, Q100W3056G-240, and Q100W3056S2
8 (on 1) 9 (on 8)	S-Switch (bicolor) models Q50W3056SG, Q50W3056SG-240, Q50W3056S2, Q50W3056S2-240
12 (on 1)	S-Switch (bicolor) models Q50W3056SG, Q50W3056SG-240, Q50W3056S2, Q50W3056S2-240, Q75W3056SG-240, Q75W3056SG, Q100W3056G, Q100W3056G-240, and Q100W3056S2
13 (on 8,1)	S-Switch (bicolor) models Q50W3056SG, Q50W3056SG, Q50W3056SG-240 and Q50W3056S2

Claim 1	Accused Products
An LED light system configured for providing broad-spectrum white light suitable for a commercial image recording, in a form factor of a fluorescent light tube lamp, the LED light system comprising:	The Accused Products provide broad spectrum white light suitable for commercial image recording and the Accused Products have the form of a fluorescent tube. 

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Ex. 2056 (2017 Q-LEDs) at PDF 2

SPECIFICATIONS

At Quasar Science, we attempt to optimize the conjunction between excellent CRI, lasting color performance and maximum output, producing the highest lumens per watt possible while retaining Quasar Science's renown color spectrum.



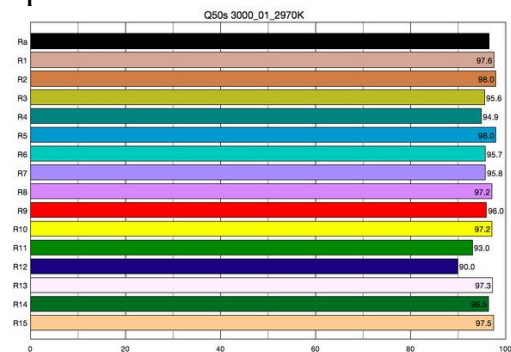
All Quasar products have a CRI of 95+ with 0CC (no Magenta or Green spikes)

A color rendering index (CRI) is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in color-critical applications such as neonatal care, photography and cinematography. It is defined by the International Commission on Illumination (CIE) as follows:

Color rendering: Effect of an illuminant on the color appearance of objects by conscious or subconscious

Ex. 2054 (2016 Specifications) at PDF 1

The spectrum is broad as shown by the emitted colors readings in the CRI graphic:



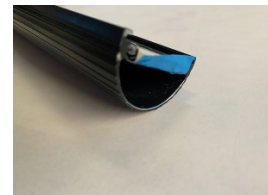
Ex. 2054 (2016 Specifications) at PDF 2

a. a housing having ends and

The Accused Products have a housing with ends (red arrows).

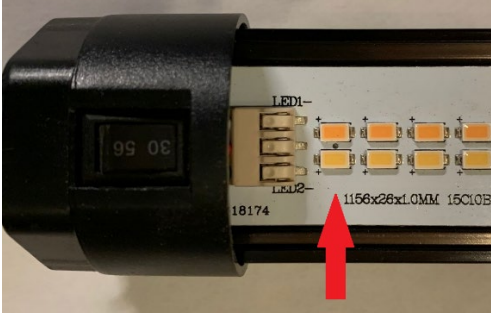
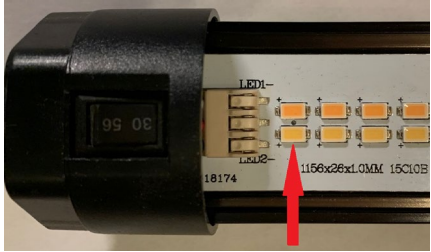


Ex. 2055 (2016 Q-Line) at PDF 3

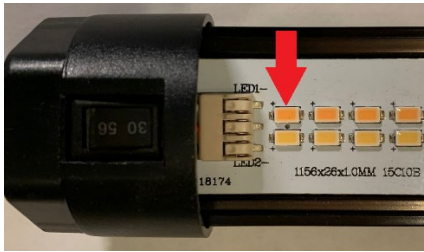


Ex. 2057 (S-Switch Photos) at PDF 1-2

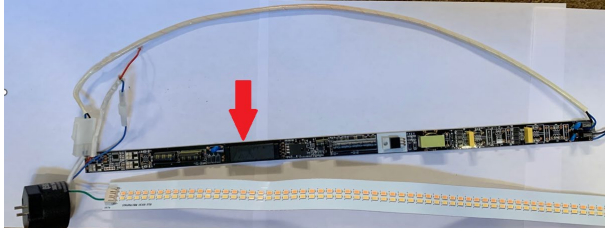
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including a support structure in a form of an elongated and narrow surface having a top side and a bottom side;	The Accused Products include a support structure (red arrow) that has a long narrow surface with top and bottom sides.  Ex. 2057 (S-Switch Photos) at PDF 1
b. a plurality of first LEDs mounted on the top side of the support structure and configured to emit broad-spectrum white light in a first predetermined Kelvin temperature range of cool white light;	The Accused Products include a first set of LEDs (row at red arrow) mounted on the support structure configured to emit white light in the Kelvin temperature range of cool white.  Ex. 2057 (S-Switch Photos) at PDF 1 “Color Temp Options: 3000k/5600k Switch” Ex. 2056 (2017 Q-LEDs) at PDF 4 (5600k is cool white); Ex. 2100 (Fisher Decl.), ¶s 198-199
c. a plurality of second LEDs mounted on the top side of the support structure and configured to emit broad-spectrum white light in a second predetermined	The Accused Products include a second set of LEDs (row at red arrow) mounted on the support structure configured to emit warm white light.

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Kelvin temperature range of warm white light;	 Ex. 2057 (S-Switch Photos) at PDF 1 “Color Temp Options: 3000k/5600k Switch” Ex. 2056 (2017 Q-LEDs) at PDF 4 (3000k is warm white) ; Ex. 2100 (Fisher Decl.), ¶s 198-199
d. electronic circuitry mounted to the support structure	The Accused Products include circuitry (red arrows) mounted to the support structure that includes a circuit that provides power to the LEDs.  Ex. 2057 (S-Switch Photos) at PDF 1 (the LED driver circuitry, right, including switch circuitry, left)
[the circuitry] including an LED driver circuit configured for driving (i) the first LEDs, to provide light in the first predetermined Kelvin temperature range; or (ii) the second LEDs, to provide light in the second predetermined Kelvin temperature range,	The Accused Products use two-way switches enabling selection between cool white LEDs on and warm white LEDs on. “Switch lamps have a rocker switch at one end of the lamp to select either 3000k or 5600k.” Ex. 2056 (2017 Q-LEDs) at PDF 4. In the Accused Products there is a switch that selectively enables power from the LED driver circuitry to go to

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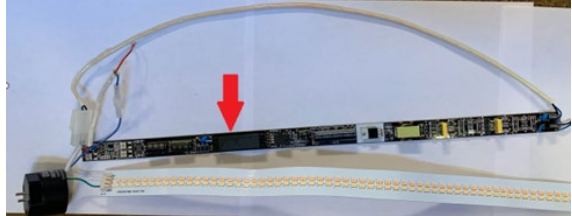
	the first or second set of LEDs of the Accused Products.  Ex. 2057 (S-Switch Photos) at PDF 1 The LED driver circuitry (generally at red arrow below) is shown below.  Ex. 2057 (S-Switch Photos) at PDF 2
wherein the first and second predetermined Kelvin temperature ranges are nonoverlapping, and	In the Accused Products, the kelvin temperature range of the first and second LEDs are non-overlapping. “Color Temp Options: 3000k/5600k Switch” Ex. 2056 (2017 Q-LEDs) at PDF 4 (5600k is cool white); Ex. 2100 (Fisher Decl.), ¶199

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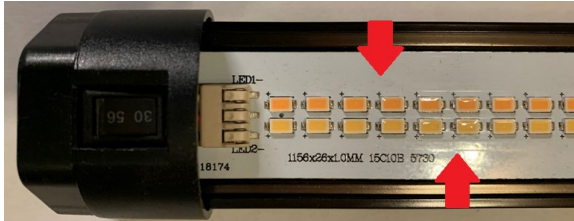
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Claim Chart U.S. Patent No. 10,566,895 v S-Switch Lights

including a printed circuit board mounted to the support structure for carrying electrical power from a connection to the LED driver circuit and then to the first and second LEDs; and	The Accused Products include a printed circuit board (generally at red arrow) mounted to the support structure and has the LED driver circuit.  Ex. 2057 (S-Switch Photos) at PDF 2
e. an elongate cover extending substantially a length of the support structure and covering the top side of the support structure for diffusing light emitted by the first and second LEDs; and	The Accused Products include a cover (red arrow) that extends substantially the length of the support structure and covers the top side of the support structure and that diffuses the emitted light.  Ex. 2055 (2016 Q-Line) at PDF 2
f. wherein the housing and cover together have an elongate linear form factor,	The housing and cover have a form factor of a fluorescent tube light which is straight and long (like a fluorescent tube). Q-Line - S Switch Linear LED Lamps – Quasar Science  Ex. 2056 (2017 Q-LEDs) at PDF 3 Our Direct Lamps offer Replacement into Fluorescent Fixtures without the need for rewiring, saving time and money. Ex. 2054 (2016 Specifications) at PDF 4

Claim Chart U.S. Patent No. 10,566,895 v S-Switch Lights

g. wherein the LED light system is configured for receiving input power to be provided to the LED driver circuit to selectively light the first or second LEDs, and	The Accused Products have a connection (the pins) at one of the ends for receiving power that is provided to the LEDs.  Ex. 2055 (2016 Q-Line) at PDF 2
h. wherein the first and second LEDs are disposed in a plurality of rows distributed along the length of the top side of the support structure to emit light, when selectively lit by the LED driver circuit, along the length of the top side of the support structure,	In the Accused Products, the first and second sets of LEDs (first set/row at lower red arrow and second set/row at upper red arrow) are equally distributed in two rows along the length of the support structure.  Ex. 2057 (S-Switch Photos) at PDF 1
i. wherein the light is diffused by the cover and	In the Accused Products, the light is diffused by a diffusion cover (red arrow).  Ex. 2055 (2016 Q-Line) at PDF 2
[the light] is suitable for the commercial image recording both when the emitted light from the LED	The light produced by the Accused Products is suitable for commercial image recording when either the first or

Claim Chart U.S. Patent No. 10,566,895 v S-Switch Lights

light system is in the first temperature range of cool white light and when the emitted light from the LED light system is in the second temperature range of warm white light, and	second sets of LEDs are illuminated. SPECIFICATIONS At Quasar Science, we attempt to optimize the conjunction between excellent CRI, lasting color performance and maximum output, producing the highest lumens per watt possible while retaining Quasar Science's renown color spectrum.  All Quasar products have a CRI of 95+ with 0CC (no Magenta or Green spikes) A color rendering index (CRI) is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in color-critical applications such as neonatal care, photography and cinematography. It is defined by the International Commission on Illumination (CIE) as follows: Color rendering: Effect of an illuminant on the color appearance of objects by conscious or subconscious Ex. 2054 (2016 Specifications) at PDF 1														
j. wherein the light emitted from the LED light system is said suitable for the commercial image recording when said emitted light:	The light produced by the Accused Products is suitable for use in commercial image recording as shown below in elements j.(i), (ii) and (iii).														
(i) is at least 1000 lumens when the first LEDs are lit and is also at least 1000 lumens when the second LEDs are lit;	The Accused Products use LEDs that produce 90+ lumens per watt. The 15W Q15W3056SG (one foot) light produces 1350 lumens while the larger Accused Products produce even more. Features & Specifications <table border="0"> <tr> <td>Luminaires: 2000K & 6000K LEDs</td> <td>True Power: 15 W - Apparent Power: 21.6 VA</td> </tr> <tr> <td>Color Control: Onboard Crossfade Wheel</td> <td>Power Factor: 0.694</td> </tr> <tr> <td>Lifetime: 25,000+ hours</td> <td>Voltage: 120 or 240 VAC</td> </tr> <tr> <td>Flicker Free</td> <td>Current Draw: 0.18 A @ 120 V [0.09 A @ 240 V]</td> </tr> <tr> <td>Length: 1' [0.305 m]</td> <td>Efficiency: 90+ lumens / W</td> </tr> <tr> <td>Diffusion Size: 9 3/16" (L) x 1 3/8" (W) [23.34 cm (L) x 3.5 cm (W)]</td> <td>Power Connect: Grounded G13 Single End</td> </tr> <tr> <td>Weight: 0.6 lbs [0.272 kg]</td> <td>Ballast: Internal Self Ballasted</td> </tr> </table> Ex. 2058 (2018 Q50XG info sheet)(90+ lumens per watt x 15W = 1350 lumens even for a 1' model and certainly for 2' or more which receives 25W x 90 lumens per watt = 2250 lumens) See also: “Energy Efficiency – At 90+ lumens per watt the Q-LED line vastly outperforms Quartz, Halogen, Plasma and HMI lighting sources in the luminous output to power consumption ratio.” Ex 2032, p. 2 under “Energy Efficiency” referring to 90+ lumens per	Luminaires: 2000K & 6000K LEDs	True Power: 15 W - Apparent Power: 21.6 VA	Color Control: Onboard Crossfade Wheel	Power Factor: 0.694	Lifetime: 25,000+ hours	Voltage: 120 or 240 VAC	Flicker Free	Current Draw: 0.18 A @ 120 V [0.09 A @ 240 V]	Length: 1' [0.305 m]	Efficiency: 90+ lumens / W	Diffusion Size: 9 3/16" (L) x 1 3/8" (W) [23.34 cm (L) x 3.5 cm (W)]	Power Connect: Grounded G13 Single End	Weight: 0.6 lbs [0.272 kg]	Ballast: Internal Self Ballasted
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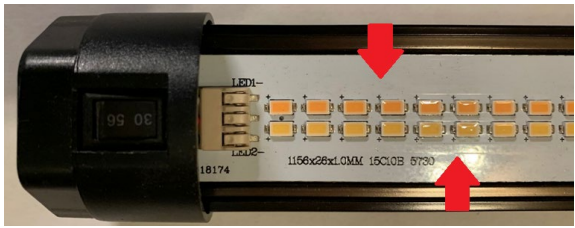
Claim Chart U.S. Patent No. 10,566,895 v S-Switch Lights

	watt and the luminous output of the Q-LED line, rather than of the LEDs)
(ii) is broad-spectrum white light having a color deviation corresponding to less than five points of green and less than five points of magenta (5M, 5G) of color compensation (CC), and	The Accused Products have no Green or magenta spikes and have 0CC. SPECIFICATIONS At Quasar Science, we attempt to optimize the conjunction between excellent CRI, lasting color performance and maximum output, producing the highest lumens per watt possible while retaining Quasar Science's renown color spectrum.  All Quasar products have a CRI of 95+ with 0CC (no Magenta or Green spikes) A color rendering index (CRI) is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in color-critical applications such as neonatal care, photography and cinematography. It is defined by the International Commission on Illumination (CIE) as follows: Color rendering: Effect of an illuminant on the color appearance of objects by conscious or subconscious Ex. 2054 (2016 Specifications) at PDF 1
(iii) has a color rendering index of light emitted from each of the first LEDs or each of the second LEDs, whichever respective plurality of first or second LEDs is lit, that is greater than 90.	The Accused Products have a color rendering index (CRI) greater than 95. SPECIFICATIONS At Quasar Science, we attempt to optimize the conjunction between excellent CRI, lasting color performance and maximum output, producing the highest lumens per watt possible while retaining Quasar Science's renown color spectrum.  All Quasar products have a CRI of 95+ with 0CC (no Magenta or Green spikes) A color rendering index (CRI) is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in color-critical applications such as neonatal care, photography and cinematography. It is defined by the International Commission on Illumination (CIE) as follows: Color rendering: Effect of an illuminant on the color appearance of objects by conscious or subconscious Ex. 2054 (2016 Specifications) at PDF 1

Claim 3	Accused Products
The LED light system of claim 1, wherein the first LEDs are each configured to emit light with a color temperature between 5000 K and 5800 K, and the second LEDs are each configured to emit light with a color temperature between 2800 K and 3300 K.	The Accused Products have a switch ("rocker switch" 30/56-see red arrow) to select between a warm color temperature 3000K and a cool color temperature 5600K.

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	 Linear LED Lamp Switch lamps have a rocker switch at one end of the lamp to select either 3000k or 5600k. Length and Wattage: 2' 25 watt - Q25S 4' 50 watt - Q50S 8' 100 watt - Q100S 1' 15 watt - Q15S 6' 75 watt - Q75S Ex. 2056 (2017 Q-LEDs) at PDF 2-3
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Claim 6	Accused Products
The LED light system of claim 1, wherein the first and second LEDs are phosphor-based light emitters.	The Accused Products have LEDs that emit white light and so are phosphor-based.  Ex. 2057 (S-Switch Photos) at PDF 1; Ex. 2100 (Fisher Decl.) at ¶198

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Claim 8	Accused Products
The LED light system of claim 1, wherein the housing has a length of about four feet.	The Accused Products have a length of four feet (see red encircled 4' size).  Ex. 2056 (2017 Q-LEDs) at PDF 3

Claim 9	Accused Products
The LED light system of claim 8, wherein the housing has a cross-sectional dimension of no greater than about 41 mm.	The accused products have a version that has a cross section of about 1.5" and thus is no greater than 41 mm (1.5" x 25.4 mm/in = 38.1 mm) Ex2051 (Hoffman Decl.) at ¶39

Claim 12	Accused Products
The LED light system of claim 1, further comprising a power supply configured to provide at least 42 watts, and	The Accused Products have a power supply that provides 50 watts of power. The wattage of the Accused Products is listed in their SKUs (e.g., the <u>Q50W</u>3056S2 is 50 watts). Linear LED Lamp Switch lamps have a rocker switch at one end of the lamp to select either 3000k or 5600k. Length and Wattage: 2' 25 watt - Q25S 4' 50 watt - Q50S 8' 100 watt - Q100S 1' 15 watt - Q15S 6' 75 watt - Q75S

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	Ex. 2056 (2017 Q-LEDs) at PDF 3
wherein the LED driver is configured to selectively drive the first LEDs with at least 42 watts and the second LEDs with at least 42 watts.	In the Accused Products, the LED driver provides at least 50 watts to the first or second LEDs, and the Accused Products use two-way switches enabling selection between cool white LEDs on and warm white LEDs on. Linear LED Lamp Switch lamps have a rocker switch at one end of the lamp to select either 3000k or 5600k. Length and Wattage: 2' 25 watt - Q25S 4' 50 watt - Q50S 8' 100 watt - Q100S 1' 15 watt - Q15S 6' 75 watt - Q75S Ex. 2056 (2017 Q-LEDs) at PDF 3

Claim 13	Accused Products
The LED light system of claim 8, further comprising a power supply configured to provide at least 42 watts, and	The Accused Products have a power supply that provides 50 watts of power. The wattage of the Accused Products is listed in their SKUs (e.g., the Q50W3056S2 is 50 watts).
wherein the LED driver is configured to selectively drive the first LEDs with at least 42 watts and the second LEDs with at least 42 watts.	In the Accused Products, the LED driver provides at least 42 watts to the first or second LEDs. The Accused Products use two-way switches (red arrow) enabling selection between cool white LEDs on and warm white LEDs on.  Ex. 2056 (2017 Q-LEDs) at PDF 2