

U.S. Patent No. 10,566,895 vs Quasar Crossfade 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.

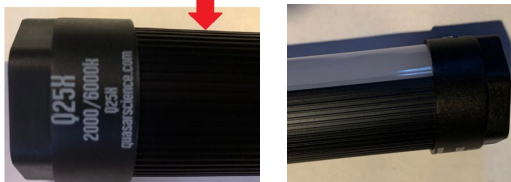
Claim	Quasar Crossfade Products
1 6 (on 1)	Crossfade (bicolor) models 15W2060XG, Q15W2060XG-240, Q25W2060XG, Q25W2060XG-240, Q50W2060XG, Q50W2060XG-240, 921-2302, 921-2303, 921-2305, Q75W2060XG, Q75W2060XG-240, Q100W2060XG and Q100W2060XG-240
8 (on 1) 9 (on 8)	Crossfade (bicolor) models Q50W2060XG, Q50W2060XG-240, 921-2303
12 (on 1)	Crossfade (bicolor) models Q50W2060XG, Q50W2060XG-240, 921-2303, 921-2305, Q75W2060XG, Q75W2060XG-240, Q100W2060XG, and Q100W2060XG-240
13 (on 8,1)	Crossfade (bicolor) models Q50W2060XG, Q50W2060XG-240, 921-2303

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. CROSSFADE: “With the Crossfade, tune the lamp from ... 2000° Kelvin Candle Light all the way through to our 6000° Kelvin Overcast Daylight. Whether lighting actors or lighting environments, the versatility is undeniable. * * * X-fade White Light”

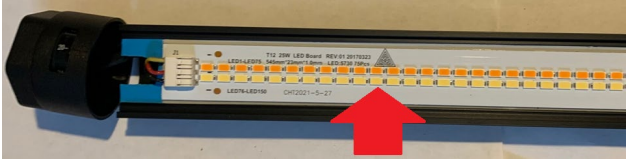
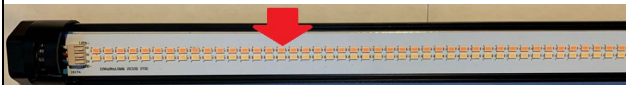
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	Ex. 2062 (Crossfade Info Page) at PDF 2 (first text paragraph and first “Features” bullet point) Fluorescent tube shape:  Ex. 2062 (Crossfade Info Page) at PDF 1 CROSSFADE X: “The Crossfade X, a low-profile linear light source, offers a simple, broad spectrum, tunable white light from ... warm 2000K to a crisp 6000K. * * * Use one as a key light, rig three for a 3-point lighting setup, ... or go big: stack 100 into a massive LED array with unprecedented energy efficiency for illuminating stagebackings or for rigging above diffusion for the perfect skylight.” Ex. 2063 (Crossfade X Info Page) at PDF 2 (first two paragraphs) Fluorescent tube form factor:  Ex. 2063 (Crossfade X Info Page) at PDF 1
a. a housing having ends and	The Accused Products have a housing with ends (red arrows). CROSSFADE•  Ex. 2062 (Crossfade Info Page) at PDF 1

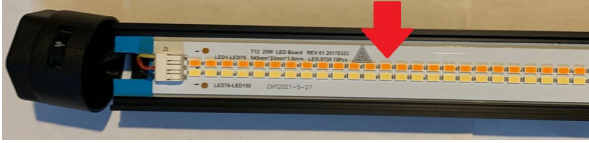
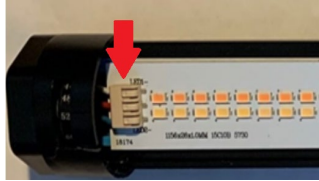
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	(ends of housing) Housing (red arrow) below:  Ex. 2060 (Crossfade Photos) at PDF 1 CROSSFADE X  Ex. 2063 (Crossfade X Info Page) at PDF 1 (ends of housing) Housing (red arrow) below:  Ex. 2061 (Crossfade X Photos) at PDF 1
including a support structure 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 arrows) that has a long narrow surface with top and bottom sides. CROSSFADE  Ex. 2060 (Crossfade Photos) at PDF 1 CROSSFADE X  Ex. 2061 (Crossfade X Photos) at PDF 1
b. a plurality of first LEDs mounted on the top side of the support structure and configured to emit	The Accused Products include a first set of LEDs (row at red arrow) mounted on the support structure configured to emit white

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broad-spectrum white light in a first predetermined Kelvin temperature range of cool white light;	light in the Kelvin temperature range of cool white. Yellow-ish LEDs are cool white. CROSSFADE  Ex. 2060 (Crossfade Photos) at PDF 1 “With the Crossfade, tune the lamp from ... 2000° Kelvin Candle Light ... to our 6000° Kelvin Overcast Daylight.” Ex. 2062 (Crossfade Info Sheet) at PDF 1 (first full sentence; 6000° Kelvin is cool white) CROSSFADE X  Ex. 2061 (Crossfade X Photos) at PDF 1 “The Crossfade ... offers a simple, broad spectrum, tunable white light from ... warm 2000K to a crisp 6000K.” Ex. 2063 (Crossfade X Info Page) at PDF 2 (first full sentence; 6000K is cool white)
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 Kelvin temperature range of warm white light;	The Accused Products include a second set of LEDs (row at red arrow) mounted on the support structure configured to emit warm white light. Orange-ish LEDs are warm white. CROSSFADE 

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	Ex. 2060 (Crossfade Photos) at PDF 1 “With the Crossfade, tune the lamp from ... 2000° Kelvin Candle Light ... to our 6000° Kelvin Overcast Daylight.” Ex09 at PDF 1 (first full sentence; 2000° Kelvin is warm white) CROSSFADE X  Ex. 2061 (Crossfade X Photos) at PDF 1 “The Crossfade X ... offers a simple, broad spectrum, tunable white light from ... warm 2000K to a crisp 6000K.” Ex. 2063 (Crossfade X Info Page) at PDF 2 (first full sentence)
d. electronic circuitry mounted to the support structure	The Accused Products include circuitry (red arrow) mounted to the support structure that includes a circuit that provides power to the LEDs. CROSSFADE  Ex. 2060 (Crossfade Photos) at PDF 1 CROSSFADE X  Ex. 2061 (Crossfade X Photos) at PDF 1

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[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 utilize a switch (selector or scroll wheel at red arrow) enabling selection between cool white (first) LEDs and warm white (second) LEDs.

CROSSFADE



Ex. 2060 (Crossfade Photos) at PDF 1

The LED driver circuitry is shown below.



Ex. 2060 (Crossfade Photos) at PDF 1

CROSSFADE X



Ex. 2061 (Crossfade X Photos) at PDF 1

The LED driver circuitry is shown below.



Ex. 2061 (Crossfade X Photos) at PDF 1

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.

CROSSFADE

“With the Crossfade, tune the lamp from ... 2000° Kelvin Candle Light ... to our 6000° Kelvin Overcast Daylight.”

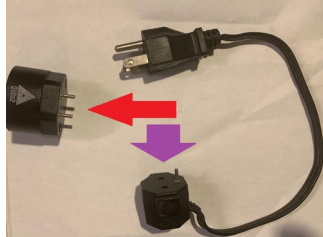
U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

	Ex2062 (Crossfade Info Sheet) at PDF 1 (first full sentence; 2000° Kelvin is warm white) CROSSFADE X “The Crossfade X ... offers a simple, broad spectrum, tunable white light from ... warm 2000K to a crisp 6000K.” Ex. 2063 (Crossfade X Info Page) at PDF 2 (first full sentence)
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;	The Accused Products include a printed circuit board (generally at red arrow) mounted to the support structure that connects to the LED driver circuit. CROSSFADE  Ex. 2060 (Crossfade Photos) at PDF 1 CROSSFADE X  Ex.2061 (Crossfade X Photos) at PDF 1
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. CROSSFADE

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	 Ex. 2062 (Crossfade Info Page) at PDF 1  Ex. 2060 (Crossfade Photos) at PDF 1 CROSSFADE X  Ex. 2063 (Crossfade X Info Page) at PDF 1  Ex. 2061 (Crossfade X Photos) at PDF 1
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). CROSSFADE:  Ex. 2062 (Crossfade Info Page) at PDF 1 CROSSFADE X:  Ex. 2063 (Crossfade X Info Page) at PDF 1
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,	The Accused Products have a connection at one of the ends for receiving power that is provided to the LEDs.

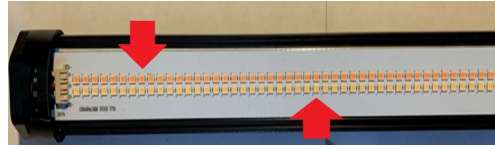
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	CROSSFADE “Single End Power Input” Ex. 2062 (Crossfade Info Page) at PDF 2 (bullet point at middle of page)  Ex. 2060 (Crossfade Photos) at PDF 1 (red arrow shows prongs on end of Crossfade that connects to power cord at indigo arrow) CROSSFADE X “TRUE1 Multibank Power Adaptors...simplify power cabling....” Ex. 2063 (Crossfade X Info Page) at PDF 3 (last line)  Ex. 2061 (Crossfade X Photos) at PDF 1 (red arrow shows recessed connectors on end of Crossfade X that connect to power cord at indigo arrow)
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	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.

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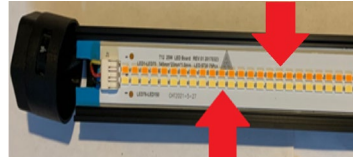
the LED driver circuit, along the length of the top side of the support structure,

CROSSFADE



Ex. 2060 (Crossfade Photos) at PDF 1

CROSSFADE X



Ex. 2061 (Crossfade X Photos) at PDF 1

i. wherein the light is diffused by the cover and

In the Accused Products, the light is diffused by the cover.

CROSSFADE



Ex. 2062 (Crossfade Info Page) at PDF 1



Ex. 2060 (Crossfade Photos) at PDF 1

CROSSFADE X



Ex. 2063 (Crossfade X Info Page) at PDF 1



Ex. 2061 (Crossfade X Photos) at PDF 1

Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

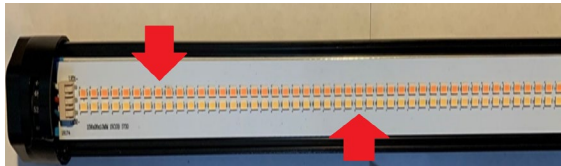
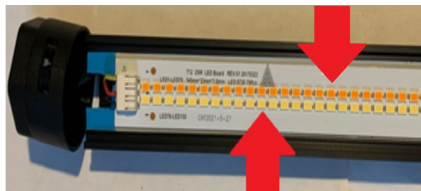
[the light] is suitable for the commercial image recording both when the emitted light from the LED light system is in the first temperature range of cool white light and when the emitted light from the LED light system is in the second temperature range of warm white light, and	The light produced by the Accused Products is suitable for commercial image recording when either the first or 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 OCC (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 (Specifications) at PDF 1 (referring to “cinematography” at fourth line from bottom)																
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. CROSSFADE The 15W Q15W3056SG light produces 1350 lumens while the larger Accused Products produce even more. <table border="1"> <thead> <tr> <th align="left" colspan="2">Features & Specifications</th> </tr> </thead> <tbody> <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> </tbody> </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+	Features & Specifications		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 vs Quasar Crossfade Lights

	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 watt and the luminous output of the Q-LED line, rather than of the LEDs) CROSSFADE X Using 90+ lumens/W, at 15W for the smallest Crossfade X model, the Crossfade X has at least 1350 lumens. Ex. 2058 (2018 Q50XG Info Sheet) (see above discussion re Crossfade)
(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 emit broad spectrum white light with no Green or magenta spikes (“0CC”). CROSSFADE 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 (“All Quasar products have a CRI of 95+ with 0CC (no Magenta or Green spikes)”) CROSSFADE X: “The Crossfade X ... offers a simple, broad spectrum, tunable white light from ... warm 2000K

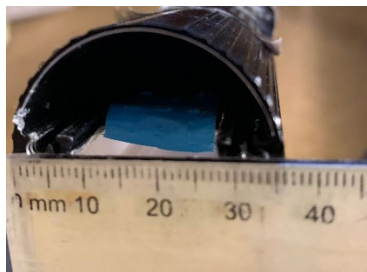
Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

	to a crisp 6000K.” Ex. 2063 (Crossfade X Info Page) at PDF 2 (first paragraph; emphasis added) “Featuring a CRI of 95+ and no green or magenta spike” Ex2036 (4th line of paragraph at middle of page)
(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. See j.(ii) immediately above

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. CROSSFADE  Ex.2060 (Crossfade Photos) at PDF 1; Ex. 2100 (Fisher Decl.), ¶198 CROSSFADE X  Ex.2061 (Crossfade X Photos) at PDF 1; Ex. 2100 (Fisher Decl.), ¶198

Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

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. CROSSFADE: Ex. 2062 (Crossfade Info Page) at PDFs 3 and 4 (models starting with Q50..." are 4 feet) CROSSFADE X: Ex. 2063 (Crossfade X Info Page) ("Available in ... 4 ft..." under "Multiple Sizes" heading)

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 cross-sectional dimension of no greater than about 41 mm: CROSSFADE:  Ex. 2060 (Crossfade Photos) at PDF 1; Ex. 2051 (Hoffman Decl.), ¶19 CROSSFADE X:  Ex. 2061 (Crossfade X Photos) at PDF 1; Ex. 2051 (Hoffman Decl.), ¶19

Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

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 at least 42 watts or more of power. The wattage of the Accused Products is listed in their SKUs (e.g., the <u>Q50X...</u> is 50). CROSSFADE: Length and Wattage: • 1' 15 watt - Q15X - SOLD OUT • 2' 25 watt - Q25X • 4' 50 watt - Q50X • 6' 75 watt - Q75X • 8' 100 watt - Q100X Ex. 2062 (Crossfade Info Page) at PDF 2 (near bottom Q50X, Q75X and Q100X have 50, 75 and 100 watts) CROSSFADE X: Key Features • 120V, 50W Bi-Color LED Light Tube • 2000-6000K Color Temperature • Length: 4' • Dimmable, Flicker-Free Operation Show More This Crossfade X Linear Bi-Color LED Light Tube from Quasar Science measures 4' long and is a low-profile linear light source that offers a simple, broad spectrum and tunable white light from a beautifully warm 2000K to a crisp 6000K. Whether for lighting Ex. 2064 (BH Photo Crossfade X) at PDF 1 (“50W” for the “4’” model; see under “Key Features” near bottom left; larger models have more wattage)
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.	For both the Crossfade and Crossfade X, at the 2000K setting only the 2000K warm LEDs are on and are drivable with at least 42 watts and at the 6000K setting only the 6000K cool LEDs are on and are drivable with at least 42 watts.

Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

	See immediately above.
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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 at least 42 watts or more of power. The wattage of the Accused Products is listed in their SKUs (e.g., the Q50X... is 50 watts). CROSSFADE: Length and Wattage: • 1' 15 watt - Q15X - SOLD OUT • 2' 25 watt - Q25X • 4' 50 watt - Q50X • 6' 75 watt - Q75X • 8' 100 watt - Q100X Ex. 2062 (Crossfade Info Page) at PDF 2 (near bottom Q50X, Q75X and Q100X have 50, 75 and 100 watts) CROSSFADE X: Key Features • 120V, 50W Bi-Color LED Light Tube • 2000-6000K Color Temperature • Length: 4' • Dimmable, Flicker-Free Operation Show More This Crossfade X Linear Bi-Color LED Light Tube from Quasar Science measures 4' long and is a low-profile linear light source that offers a simple, broad spectrum and tunable white light from a beautifully warm 2000K to a crisp 6000K. Whether for lighting Ex. 2064 (BH Photo Crossfade X) at PDF 1 (“50W” for the “4’” model; see under “Key Features” near bottom left; larger models have more wattage)

Claim Chart U.S. Patent No. 10,566,895 vs Quasar Crossfade Lights

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.	For both the Crossfade and Crossfade X, at the 2000K setting only the 2000K warm LEDs are on and are drivable with at least 42 watts and at the 6000K setting only the 6000K cool LEDs are on and are drivable with at least 42 watts. See immediately above.
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