

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUASAR SCIENCE LLC
Petitioner,

v.

COLT INTERNATIONAL CLOTHING, INC. d/b/a COLT LED
Patent Owner.

Case: IPR2023-00611
U.S. Patent No. 10,197,224

PATENT OWNER'S RESPONSE
UNDER 37 C.F.R. § 42.107

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I. INTRODUCTION

Colt International Clothing, Inc., Inc. d/b/a Colt LED (“Colt” or “Patent Owner”), the owner of U.S. Patent No. 10,197,224 (“the ’224 Patent”), submits this Response to the Petition of Quasar Science LLC (“Quasar” or “Petitioner”) challenging the validity of claims 1, 3, 4, 7-13, 23, 25, 26, 28-39 and 41-45 of the ’224 Patent.

The invention claimed in the ’224 Patent improves an LED tubular luminaire of a narrow, 41 mm diameter, for the entertainment industry (e.g., for filming for TV and motion pictures) by combining broad-spectrum white light LEDs with colored LEDs to achieve a luminaire that can provide color effects and also provide suitable white light needed for filming. In a preferred embodiment, the white light produced may be selected between daylight and tungsten which facilitates filming without having to change the lights and thus saves greatly on labor. In another preferred embodiment, the colored LEDs are red, green, blue, along with the broad-spectrum different white lights. In a further embodiment, the colored LEDs are driven at 1/255 increments to provide 255 colors of output to match the color wheel used in the entertainment industry. The invention provides substantial flexibility for the luminaire’s usage for filming without the need to change luminaires or filters.

The ’224 Patent claims priority through a continuation in part chain back to the application of May 17, 2013 which is now U.S. Patent No. 9,719,642 (“the ‘642

Patent”). The commercial embodiment of the ‘642 Patent was copied by Petitioner’s (Quasar Science LLC, a DE company)’s predecessor, Quasar Science LLC, a CA company (“Old Quasar”). Then, when Patent Owner Colt introduced its “RGBAW” product (which embodies the present claims) into the marketplace, Old Quasar copied that. Copying was admitted by Old Quasar’s manufacturer. See, *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1099 (Fed.Cir. 1985), *cert. granted*, judgment vacated on other grounds, 475 U.S. 809 (1986)(Copying, though not dispositive, is "strong evidence of nonobviousness.")

In addition to copying as strong evidence of nonobviousness, Petitioner has also made significant sales explained in the secondary considerations section below.

With respect to the specifics of Petitioner’s Ground I, the Board found that Kit (Ex.1004) did not teach use of white LEDs in combination with colored LEDs. See, Institution Decision, Paper #10, pp. 17-18. Ground I fails for this reason.

With respect to Ground II, Petitioner only asserted a combination of references under 35 USC 103 including a primary reference, Mueller (Ex.1006). See Institution Decision, p. 6. Mueller is asserted by Petitioner to teach five different colors of LEDs in a tubular luminaire. But Mueller’s disclosure of the luminaire is vague and does not appear to have the onboard LED driver as recited in ‘224 Patent claim 1, and has other shortcomings as described herein.

Moreover, with respect to dependent claims 3 and 4, Mueller fails to disclose

the 255 colors/color wheel, and with respect to dependent claim 11, Mueller fails to disclose warm and cool white LEDs and output modes from the light.

The Petitioner presents Grounds 1 and 2 of unpatentability based on proposed combinations of six references, namely, Kit (Ex.1004), Ducharme (Ex. 1005), Katzir (Ex.1010), Mueller (Ex. 1006), Ivey (Ex.1008) and Ansems (Ex. 1007). The art cited in the Petition fails to disclose or render obvious multiple limitations for the claimed “LED lighting device configured for providing light suitable for a commercial image recording,” including failing to disclose:

(1) Claim element 1[c] which provides, in pertinent part:

an array of LED emitting devices...configured to emit five different colors...: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range.

(2)_Claim element 1[e] recites “an LED driver ... configured

to selectively provide electrical power to the array of LED emitting devices.”

(3)_Claim element 1[f] provides: “wherein the housing has a linear form factor substantially that of a fluorescent tube having an axial direction and having a diameter of no greater than about 41 mm....”

Ex. 1001 at claim 1, 1[pre], 1[c], 1[e] and 1[f]. (claim 1[e]). For example, neither primary reference (Kit and Mueller) discloses or suggests an embodiment with five colors of LEDs, with one being broad-spectrum white light. Kit only teaches white LEDs or colored LEDs instead of white. Mueller provides a laundry list of colored LEDs and a separate laundry list of potential luminaire form factors, but e.g., provides insufficient guidance for rendering obvious the claimed color combination with broad spectrum white and for the combination as used on a tubular luminaire of no more than 41 mm.

Moreover, Petitioner fails to meet its burden to provide adequate explanation regarding motivation to combine the references supporting Grounds 1 and 2, including failing to demonstrate obviousness of the proposed combination of Kit with Ducharme and Katzir, because at best Ducharme would only modify Kit’s white light embodiment. There would be no multicolored LEDs in that white light embodiment. In addition, e.g., there is no reasonable motivation to modify Mueller

by Simon which is directed to an emergency alarm or by Ansems which appears to be a flat panel light and in any event lacks any suggestion of use on a tubular luminaire.

With regard to the dependent claims, they are patentable at least by virtue of their dependencies.

Further, Petitioner has also failed to obviousness with respect to dependent claims 3, 4, 10 and 11, along with remaining dependent claims having the same subject matter. E.g., there is no teaching in any of the references of the colored LEDs being driven at 1/255 increments to provide 255 colors of output to match the color wheel. There is no teaching of the LEDs being red, green, blue, amber and broad-spectrum white light. And there is no teaching of the white light produced being selected between both daylight and tungsten.

For these reasons, Patent Owner respectfully submits that the challenged claims be confirmed as patentable.

II. THE '224 PATENT PRESENTS A NOVEL TUBULAR LED LUMINAIRE WITH MULTIPLE COLORS OF LEDS WHICH CAN BE USED SELECTIVELY TO LIGHT A SET WITH WHITE LIGHT AND ALSO TO PROVIDE COLOR EFFECTS

A. Background of the Invention in the '224 Patent

Prior to the invention in the '224 Patent, the entertainment industry lacked a

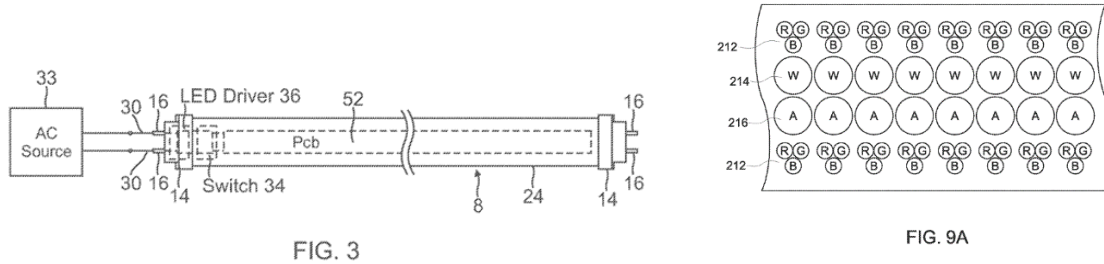
tubular multicolored LED luminaire that could be used selectively on set in productions that had the versatility to be used both for color effects and to provide white light for such set. Use of the fluorescent tube form factor for the industry was limited to, e.g., one color LED, particularly when it came to white light usage. For example, in 2014, an entertainment industry producer Mac Tech LED tubes were only a single color. See, Ex. 2001, p. 1 (“Are Mac Tech LED tubes bi-color? Mac Tech LED tubes are **single** color enclosures. We have found by comparison, that in producing a **single** color lamp we gain greater efficiency and truer, more consistent color reproductions.”)(emphasis added). Mac Tech’s website continued the **single**-color tube lamp regime up through at least April 1, 2017, the day after the application leading to the ‘224 Patent was filed. See, Ex. 2002, p. 1 (“Are Mac Tech LED tubes bi-color? Most of our product line is single color for higher output, either 3200k or 5600k.”)

An LED luminaire “designer would have extremely limited circuit board space with the T12 or T8 linear tube form factor (no more than a one-and-a-half-inch width) for heat sinking and placing LEDs....” Ex. 1001 at 3:53-56. See also, e.g., Ex. 2003 (Pohlert) at Abstract (LED lighting device) and at [0012](“fluorescent lighting systems are generally tube-shaped, which can limit the lighting configuration or mounting options.”)

B. The Solution Presented by the ’224 Patent

The ‘224 Patent provides a luminaire that not only has colored LEDs, but also

includes broad-spectrum white light LEDs. See Ex. 1001 at 18:49-51. The luminaire is tubular. Ex. 1001 at e.g., Figs. 2 and 3 and Title (“Multicolored Tube Light with Improved LED Array”). As shown in Fig. 3 and e.g., Fig. 9A, a circuit board (“Pcb 52”) has red, green, blue, amber and white LEDs (“RBG 212”; “W 214,” “A 216”):



Ex. 1001 at Figs. 3 and 9A, and at 16:67 to 17:7.

The ‘224 Patent’s novel lighting control system is for use with a camera operable to record moving images, as in e.g., broadcasting, cinematography and studio filming. Ex. 1001 at 22:55-64-68 and 23:1-3.

In an important embodiment, the white light produced by the luminaire includes both white light in the daylight and tungsten ranges of broadcast quality. Ex. 1001 at 22:56-67. The ability to have white light of image recording quality in these two ranges and also to produce multiple colors, provides for a very flexible tubular LED luminaire suitable for the image recording industry without changing out lighting or manual adjustments such as using gels or filters.

In another embodiment, the LED driver is configured to drive each of the

RGBAW LEDs in increments of 1/255 to produce 255 colors to match the film industry color wheel's colors. Ex. 1001 at 23:12-35 and 17:7-15.

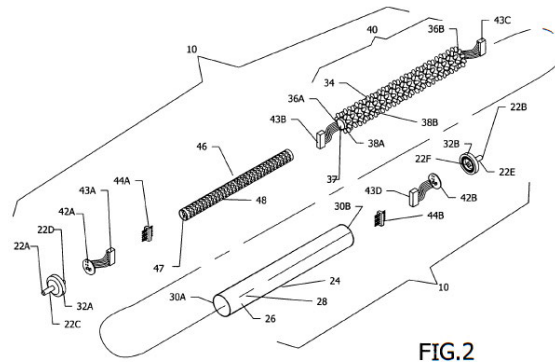
III. OVERVIEW OF THE ALLEGED PRIOR ART

A. Kit (Ex. 1004)

Kit discloses an “**energy saving** device for an LED lamp mounted to an existing fixture for a fluorescent lamp where the ballast is removed or bypassed.”

Ex. 1003, Abstract (first two lines)(emphasis added).

Fig. 2 is an exploded view of an embodiment of the lamp:



Ex. 1004 at Fig. 2.

Kit focuses on energy savings for “general lighting fixtures,” e.g.:

To reduce electrical cost and [for] reliability, LED lamps have been developed to replace the conventional incandescent lamps typically used in existing **general lighting fixtures**. LED

lamps consume less energy than conventional lamps and give much longer lamp life.

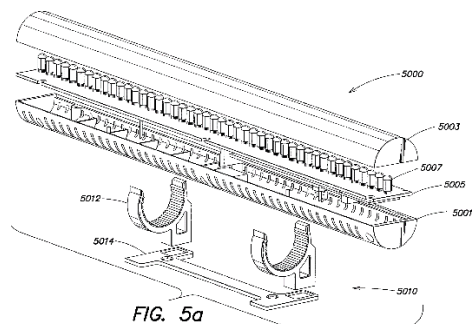
Ex. 1004 at 13:34-38 (emphasis added); see also, at 14:63-65 and at 15:6-8.

There is no mention of lighting for commercial image recording, but only for general lighting. Ex. 1004 at 13:39-43 and 16:4-9 (both referring to “general lighting”).

In one embodiment Kit discloses use of white light LEDs and in another embodiment, Kit discloses use of colored LEDs. Ex. 1004 at 24:27-29 (multicolored instead of white). There is no disclosure of using broad-spectrum white light LEDs **in combination with** colored LEDs.

B. Ducharme (Ex. 1005)

Ducharme discloses “Conventionally-Shaped Light Bulbs Employing **White LEDs**” Ex. 1005, Title (emphasis added). Fig. 5a shows an LED tube, as one possible type of luminaire of many different shapes:



The background discusses color temperature and CRI as ways of characterizing white light and mentions that “it is desirable for those involved in visual art to be able to produce exact colors of light....” Ex. 1005 at 3:1-2.

Ducharme seeks lighting fixtures with desired color temperature which may be modified “after a lighting fixture is constructed.” Ex. 1005 at 4:40-44.

Disclosed is a first embodiment which comprises a lighting fixture for generating **white light** [with] electromagnetic radiation of at least two different spectrums (including embodiments with exactly two or exactly three), each of the spectrums having a maximum spectral peak outside the region 510 nm to 570 nm, the illumination sources mounted on a mounting allowing the spectrums to mix so that the resulting spectrum is substantially continuous in the photopic response of the human eye and/or in the wavelengths from 400 nm to 700 nm.

Ex. 1004 at 4:49-59 (emphasis added). In one embodiment, Ducharme’s precision color temperature luminaire may be used to supplement “light sources such as mercury vapor lamps [and] may have particular use in cinematography.” Ex. 1004 at 32:40-45.

C. Katzir (Ex. 1010)

Katzir is directed to a “lighting assembly [that] can replace a fluorescent tube light” formed by “a tube, a light emitting diode panel..., a circuit board..., and insulation....” Ex. 1010, Abstract. Katzir’s tubular white LED luminaire is shown in Fig. 1C, reproduced below:

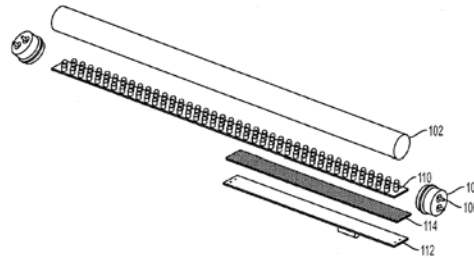


FIG. 1C

Katzir’s embodiments are directed to **white light**. Katzir has white LEDs in two or three color temperatures, e.g., tungsten and daylight and further including, in some embodiments, a mid-point color temperature white. Ex. 1010 at Figs. 5A-5F and [0053]-[0054]. Katzir’s purpose is to blend these different white color temperatures to minimize green output. [0051] (“By combining the two-color temperature ranges within one bulb, the overly green/blue tones and harshness of the fluorescent bulbs and the overly yellow and dim qualities created by tungsten bulbs are eliminated.”) Katzir does not mention any use of broad-spectrum white light and does not mention any use for filming.

D. Mueller (Ex. 1006)

Mueller discloses LED-based lighting units. Ex. 1006 at Abstract. Mueller

provides a general disclosure of lighting unit shapes, e.g., showing three different configurations in Fig. 3. Ex. 1006 at Fig. 3 and [0085]. Mueller also provides a definition of “lighting unit” or “lighting fixture” that is “an apparatus including one or more light sources of [the] same or different types.” [0064] (first three lines). Mueller makes various statements about use of multicolor LEDs and about form factors but provides no suggestion or reason why one would combine various of his laundry list of items with any other item on the laundry list. See e.g., Ex. 1006 at [0047] (laundry list of colors) and [0295] (laundry list of form factors).

E. Ansems (Ex. 1007)

Ansems is directed to an array of LEDs that are formed on a substrate to provide different colors. Ex. 1007 at Abstract. Ansems does not disclose any particular form factor for the LED luminaire. Ex. 1007 at Title and at Figs. 1-4. To the extent a shape may be disclosed, it appears to be a flat panel. Ex. 1007 at e.g., Fig. 1.

F. Ivey (Simon) (Ex. 1008)

Ivey discloses an LED-based light controller for an **emergency notification system** such as smoke or a fire or tornado. Ex. 1008 at Title and [0022]. The controller operates the LED lights in response to such an emergency. Ex. 1008 at Abstract. The LED lights may be in the form of a tube. Ex. 1008 at Figs. 1, 3 and 6.

Ivey has no teaching or suggestion of use for commercial image recording.

IV. IPR STANDARDS

A. Petitioner Bears the Burden of Proof to Show Unpatentability

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

B. Claim Construction

In an *inter partes* review filed on or after November 13, 2018, claim terms are construed based on their ordinary and customary meaning. 37 C.F.R. §42.100(b). Further, the Board should always construe claims to sustain their validity, if possible. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1329 (Fed. Cir. 2005). The specification is the “best source for understanding a technical term,” to be supplemented, “as needed, by the prosecution history.” *Id.*, at 1315.

For purposes of this response, in the independent claims, i.e., claims 1, 13, 23 and 35, the claims’ preambles recite the same:

An LED lighting device configured for providing light suitable
for a commercial image recording...

Ex. 1001 (‘224 patent), claims 1, 13, 23 and 35 (preamble).

"If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). See also *Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333, 68 USPQ2d 1154, 1158 (Fed. Cir. 2003)(court held that the claims' recitation of a patient or a human "in need" gives life and meaning to the preamble's statement of purpose.). *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951) (Preamble reciting "[a]n abrasive article" was deemed essential. The court stated "it is only by that phrase that it can be known that the subject matter defined by the claims is comprised as an abrasive article. Every union of substances capable inter alia of use as abrasive grains and a binder is not an 'abrasive article.'").

Here, every luminaire having colored LEDs is not claimed. Just luminaires "suitable for a commercial image recording."

Whether preamble recitations are structural limitations or mere statements of purpose or use "can be resolved only on review of the entirety of the [record] to gain an understanding of what the inventors actually invented and intended to encompass by the claim" as drafted without importing "'extraneous' limitations from the specification." *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251,

1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989).

Here, the interpretation of “suitable for a commercial image recording” is: “suitable for TV and studio image recording.”

To be “suitable for TV and studio image recording,” it is evident that the luminaire should not be designed in a way that color temperature and/or other important light qualities vary during film or TV shooting:

In addition, ... slight variations in the colors as lighting fixtures are moved, or **even change temperature**, during a performance or film shoot....

....Differences in lighting between adjacent scenes can disrupt the continuity of a film and create jarring effects for the viewer.

Ex. 1005, Ducharme, US 7350936 at Col. 32, lines 6-10 and 16-18.

For all remaining claim terms, Patent Owner requests that the Board adopt the ordinary and customary meaning of the claim terms as understood by one of ordinary skill in the art for purposes of this IPR only.

V. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner defines a person of ordinary skill in the art (“POSITA”) as an individual that has “a Bachelor of Science degree in electrical engineering, or a closely related field, along with at least two years of experience in the design of entertaining lighting systems, and the design and use of LED lights.” Petition at 16. Because the proposed level of ordinary skill does not affect the ultimate analysis, Patent Owner does not dispute the level of ordinary skill in the art in this paper. If, however, the level of skill of a POSITA becomes an issue and to the extent deemed necessary to resolve any dispute, Patent Owner reserves the right to propose a different level of ordinary skill in the art.

VI. PETITIONER’S GROUNDS OF INVALIDITY FAIL TO ESTABLISH A REASONABLE LIKELIHOOD OF SUCCESS

A. In Ground 1, Petitioner Failed to Establish that the Challenged Claims are Unpatentable as Obvious Over Kit in view of Ducharme and Katzir

Petitioner’s proposed Ground 1 is shown in the chart below:

Ground	’224 Patent Claims	Type	Reference
1	1, 3, 4, 7-13, 23, 25, 26, 28-39 and 41-45	§ 103	Kit in view of Ducharme and Katzir

1. There Is No Likelihood of Success on Claim 1

Petitioner proposes a 103 rejection of the challenged claims based on Kit in view of Ducharme and Katzir. Kit alone and/or in view of Ducharme and Katzir

would not achieve the invention as recited in claim 1 because they fail to disclose or teach the following elements alone and/or in combination of “[a]n LED lighting device configured for providing light suitable for a commercial image recording” (claim 1[pre]):

(1) Claim element 1[c] which provides, in pertinent part:

an array of LED emitting devices...configured to emit five different colors...: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range.

(2) Claim element 1[f]: “wherein the housing has a linear form factor substantially that of a fluorescent tube having an axial direction and having a diameter of no greater than about 41 mm....”

In claim 1, it is clear that there are five different color LEDs in the 41mm diameter or less lighting tube device, and one of the colors is broad-spectrum white light, which is one key part of what makes the device suitable for commercial image

recording.

- a. **Kit lacks any teaching of five different color LEDs in a tubular lighting device, where one of the colors is broad-spectrum white light, and Ducharme and Katzir cannot make up for this shortcoming.**

Kit lacks any teaching of five different color LEDs in a tubular lighting device, where one of the colors is broad-spectrum white light.

Petitioner argues that Kit discloses use of five different colors of LEDs wherein this includes white LEDs. But Petitioner does not point to any disclosure of an embodiment with five different LED colors wherein one LED is broad-spectrum white.

While Kit provides an embodiment of red, green and blue (“RGB”) LEDs, Kit does not teach using white LEDs with this color combination. In fact, Kit teaches away from using white with this combination in the very passage cited by Petitioner:

Another circuit module can be a color effects
module for use with color LEDs **instead of white LEDs**
used in the LED lamps.

Ex. 1004 at 24:27-29 (emphasis added); Petition, p. 28 (seventh line from bottom). It is evident that Kit is teaching this embodiment instead of an alternate embodiment where the LEDs are white. Ex. 1004 at 21:20-29 (discussing options for white LEDs). The Petition also cites to sections of Kit discussing white LEDs. See,

Petition, p. 28 (seventh line from bottom) and Ex. 1004 at 22:9-35. But this portion of Kit is referring to use of some types of white LEDs in the white LED embodiment of Kit: “In particular, the Luxeon brand of white SMD ... LEDs can also be used.... Lumileds Luxeon ... offers a 17 lumens 1-Watt white LED....” Ex. 1004: 22:9-27.

The Petition then points to another portion of Kit for teaching white LEDs. See, Petition, p. 28 (third line from bottom). This portion of Kit is simply a laundry list of colors: “LEDs are now available in colors like Red, Blue, Green, Yellow, Amber, Orange and many other colors including White.” Ex. 1004: 22:9-35; see Petition, p. 28, section entitled “Claim 1[c].” Ex. 1004 at 50-63. This laundry list provides no guidance to a POSITA that might lead one to create a tubular LED luminaire with five different colors of LEDs wherein one set is broad-spectrum white light suitable for commercial image recording, particularly since Kit is teaching away from the combination of white and colored LEDs.

The Petition asserts that “the fifth set of LEDs can emit broad-spectrum white light” and cites to yet another portion of the specification discussing color temperatures of white light. Ex. 1004 at 3:20-38; see Petition, p. 28 (third line from bottom). Here, the use of “can” in Petitioner’s brief is a hindsight driven, obvious-to-try argument. See, Petition, p. 28 (fifth line from bottom).

Moreover, because RGB can and is used to produce a white output, the cited references teach no reason to modify Kit to add a broad-spectrum white LED.

Ducharme and Katzir do not change the express teaching of Kit that colored LEDs are used instead of white LEDs, they cannot make up for the shortcomings of Kit.

b. Since Kit is not disclosing use in commercial image recording, combining Kit with an embodiment of Ducharme for commercial image recording does not make sense.

In addition to any combination of Kit, Ducharme and Katzir failing to achieve the claimed combination as explained above, it would not have been obvious to modify Kit by Ducharme. There is no mention of commercial image recording in Kit. Rather, Kit's invention is for "general lighting applications":

Unfortunately, the prior art LED lamp designs used thus far still do not provide sufficiently bright and uniform illumination for **general lighting** applications, nor can they be used strictly as direct and simple LED retrofit lamps for existing fluorescent lighting fixtures and ballast configurations.

Ex. 1004 at 13:39-43; and see also 16:4-9 (referring to "general lighting") (emphasis added).

The preamble of Claim 1 (1[pre]) recites "[a]n LED lighting device configured for providing light suitable for a commercial image recording." The Petition does not cite to any portion of Kit that refers to use in commercial image recording. See,

Petition, pp. 23-25.

Kit's purpose is to create a tubular LED lamp that replaces fluorescent bulbs and is dimmable to save energy or can be turned off or on depending upon a photosensor input and/or an occupancy sensor. Ex. 2003 at Abstract. This type of luminaire would not be useful in image recording because the light level can change at the wrong time. It is meant for use in the home, office, or the like.

Further, Kit does not teach broad-spectrum white light in combination with any multicolored embodiment. Broad-spectrum white light is an important part of what makes this luminaire suitable for use when in white mode in the image recording industry. Because use of red, green and blue would provide colors in the spectrum, use of broad-spectrum white LEDs is not obvious when used with colored LEDs.

Ducharme is entitled "Conventionally-Shaped Light Bulbs Employing **White** LEDS." Ex. 1005, Title (emphasis added). Ducharme teaches "LED-based light bulbs having one or more **white** LEDs, for replacing/retrofitting conventional light bulbs." Ex. 1005 at Abstract (lines 1-2) (emphasis added). The bulbs may be Edison-type (incandescent) (Fig. 5c), fluorescent (Fig. 5a) or otherwise. Ex. 1005 (Figs. 5a, 5c).

Kit's LED lamp's primary purpose is energy savings. Ex. 1004 at 6:41-57 and 7:5-8 (discussing "present energy crisis" and "need for more energy efficient lamps"). To that end, Kit has an extensive discussion of efficiency, daylight harvesting and occupancy sensors. Ex. 1004, e.g., at 7:9 to 8:55.

This goal of efficiency is well summed up in Kit: “To reduce electrical cost and to incur reliability, LED lamps have been developed to replace the conventional incandescent lamps typically used in existing general lighting fixtures. LED lamps consume less energy than conventional lamps and give much longer lamp life.” Ex. 1004 at 13:34-38 and see 14:63-65; 15:6-8.

Given the general use lighting, energy-saving purposes of Kit, there is no reason to modify it by Ducharme.

c. Even If It Would Have Been Obvious to Modify Kit by Ducharme and/or Katzir, the Result Would Only Be a Modified White Light Embodiment.

Any combination of Ducharme and/or Katzir with Kit, even if it were obvious, would simply result in the white LED embodiment of Kit being modified in accordance with the white light of Ducharme and/or of Katzir. It would not result in any modification of Kit’s colored LED embodiment since that embodiment has no white light. There is no motivation in Kit or Ducharme or otherwise to put Ducharme’s white LEDs into Kit’s colored LED embodiment. This is particularly true since Kit’s colored embodiment teaches away from using white LEDs. Ex. 1004 at 24:27-29 (“**Another circuit module** can be a color effects module for use with color LEDs **instead of white LEDs** used in the LED lamps.”) (emphasis added).

Katzir also only teaches white light embodiments for a tubular LED. Ex. 1010.

And, Katzir has no teaching of use for commercial image recording. Ex. 1010 at [0050] (second to last sentence); [0051] (first sentence). Katzir teaches that blending two white light sources will somehow reduce green tinted output. Ex. 1010 at [0051]. Moreover, nothing in Katzir suggests use for commercial image recording or use of broad-spectrum white LEDs. Accordingly, nothing in Katzir's disclosure would change anything about Kit's LED luminaire (whether modified by Ducharme or not) having only white or having multicolored LEDs. The result of any combination of the references would not be a luminaire with five different colored sets of LEDs, one of which is broad-spectrum white light.

The Petition fails to allege any reason to add white LEDs to Kit's color LED embodiment, and particularly since Kit sets forth that the RGB embodiment is instead of white light. The Petition simply uses hindsight to cherry pick from multiple embodiments without any reason to do so.

2. Independent claims 13, 23 and 35

Independent claims 13, 23 and 35 incorporate the same or substantially similar elements as in Claim 1, and therefore it is submitted that Petitioner has not shown a likelihood of success for the same or substantially the same reasons as for claim 1 discussed above.

2. There Is No Likelihood of Success of Any Invalidity due to Kit in View of Ducharme and Katzir for Dependent Claims 3-4 and 10-11

a. Claim 3 (255 Different Colors)

Claim 3 depends on claim 1 and recites that the LED lighting device's "LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements in **increments of about 1/255** to selectively produce at least 255 different colors from the lighting device." Ex. 1001 ('224 Patent) at claim 3 (emphasis added). Petitioner cites the same group of prior art in arguing that claim 3 would have been obvious as proposed against claim 1. However, claim 3 would not have been obvious.

The purpose of incrementing in 1/255 to produce 255 different colors is to match the color wheel used in the entertainment industry. Ex. 1001 at e.g., 23:1-17. There is no disclosure in Kit that would direct a POSITA to a color wheel. The Petition cites to Kit for RGBAW LEDs, but as explained above in discussing claim 1, Kit does not disclose or teach an RGBAW embodiment. And, even assuming for purposes of argument that an RGBAW embodiment using broad-spectrum white light would have been obvious, there is no teaching of incrementing in 1/255 to produce 255 different colors to match the 255 number of colors on the color wheel.

In the Petition, it is asserted that Kit's LED driver is adapted to selectively drive five sets of LEDs in increments of 1/255, but nowhere does Kit disclose that. See, Petition, p. 36 (sixth and fifth lines from the bottom). Rather than cite to Kit for

this proposition, the Petition cites to the Holmes declaration. Petition, p. 36 (fourth line from the bottom); Ex. 1003 at ¶s 149-150. But in these paragraphs, which are conclusory, there is no citation to Kit. Again, the word “can” is used in a manner of an obviousness to try theory, which is not sufficient to support an obviousness claim. Ex. 1003 at ¶150 (second line).

While the Petition further cites to Kit teaching a dimming circuit that may be controlled by DMX512, that control is for dimming the white light embodiment. Petition, p. 37 (first full paragraph); Ex. 1004 at 24:3-42. There is no disclosure of how that control would work with a color embodiment other than a broad statement about additional channels being required. Ex. 1004 at 34-37.

b. Claim 4 (255 Colors to Match Color Wheel)

Claim 4 depends on claim 3 and so would not have been obvious from the proposed combination for the same reasons as set forth with respect to claim 3 above. Moreover, claim 4 incorporates use of a computer console or lighting control board and expressly refers to the “LED driver ...adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements ... to selectively produce the at least 255 different colors of [a] **color wheel**.” Ex. 1001, claim 4 (emphasis added). There is no disclosure in Mueller or any of the other cited references that would teach operating the driver this way.

c. Claim 10 (RGBAW)

Claim 10 depends on claim 1 and adds that in addition to the broad-spectrum white light set of LEDs, the other four sets are “red, green, blue and amber.” Nothing in the cited references refers to this combination of colored LEDs. The Petition argues that Kit discloses all of these colors and more. While Kit does disclose a laundry list of colors, nothing in Kit suggests this combination, including broad-spectrum white light. The Petition also cites to the Holmes Declaration, but that declaration merely copies a paragraph from Kit and makes conclusory statements. See, Petition, pp. 38-39; and see Ex. 1003 at ¶s 149-150. And again, Kit does not teach, and specifically separates, any embodiments with colored LEDs from the embodiment using white LEDs.

d. Claim 11 (Daylight and Tungsten)

Claim 11 depends on claim 1 and adds that “among the colors the driver is configured to selectively produce are white light in each of **daylight and tungsten temperature ranges**.” Ex. 1001, claim 11. These two ranges are very commonly used in the entertainment industry. The combination of these two ranges in the lighting device of claim 1 would not have been obvious.

While Kit may disclose color temperature ranges of 3200K, 4100K or 5500K,

there is no teaching, suggestion or motivation to use daylight and tungsten temperature ranges of white light combined with LEDs that are producing colors and certainly not in the claimed combination with broad-spectrum white light, as well as multiple colors of LEDs, and not in a tubular format suitable for commercial image recording. Kit's discussion of available white LEDs in these ranges is in relation to his white LED embodiment. See, Petition p. 38 (middle two paragraphs); Ex. 1004 at 3:26-38 and 22:9-14. Moreover, Kit does not teach using both daylight and tungsten. The Holmes Declaration discusses some background regarding daylight and tungsten light but does not overcome the shortcomings of Kit's separation of the white LED and color LED embodiments. Moreover, there is no reasonable motivation to add two (i.e., warm and cool) different types of white light into a colored LED luminaire of Kit.

B. In Ground 2, Petitioner Failed to Establish that the Challenged Claims are Unpatentable as Obvious Over Mueller in view of Ivey (Simon) and Ansems

Petitioner's proposed Ground 1 is shown in the chart below:

Ground	'224 Patent Claims	Type	Reference
2	1, 3, 4, 7-13, 23, 25, 26, 28-39 and 41-45	§ 103	Mueller in view of Ivey (Simon) and Ansems

Petitioner proposes a 103 rejection of the challenged claims based on Mueller in view of Ivey (Simon) and Ansems. Mueller alone and/or in view of Ivey (Simon)

and Ansems would not achieve the invention as recited in claim 1 because it would lack the following elements alone and/or in combination in “[a]n LED lighting device configured for providing light suitable for a commercial image recording” (Ex. 1001 at Claim 1 (1[pre])) along with:

(1) Claim element 1[c] which provides, in pertinent part:

an array of LED emitting devices...configured to emit five different colors...: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range.

(2) Claim element 1[e] recites “an LED driver ... configured to selectively provide electrical power to the array of LED emitting devices.”

(3)_ Claim element 1[f] provides: “wherein the housing has a linear form factor substantially that of a fluorescent tube having

an axial direction and having a diameter of no greater than about 41 mm....”

Ex. 1001, claim 1, 1[pre], 1[c], 1[e] and 1[f].

Thus, it is clear that there are five different color LEDs in the lighting device, and one of the colors is broad-spectrum white light, which is part of what makes the 41 mm diameter tubular lighting device suitable for commercial image recording, as recited in the preamble. And, the five different color LEDs are driven individually by an LED driver.

Even if, for purposes of argument, Mueller teaches use of RGB with amber LEDs, or RGB with white, or even RGB with amber and white LEDs, Mueller lacks any teaching of using broad-spectrum white LEDs in such a combination. See *Bayer Schering Pharma AG v. Barr Labs., Inc.*, 575 F.3d 1341, 1347 (Fed. Cir. 2009) (“[A]n invention would not have been obvious to try when the inventor would have had to try all possibilities in a field unreduced by direction of the prior art.” And, “an invention is not obvious to try where vague prior art does not guide an inventor toward a particular solution.”)

Claim Elements 1[e] and 1[f]: Mueller also does not disclose or teach “an LED driver ... configured to selectively provide electrical power to the array of LED emitting devices.” Mueller lacks any details of how a lighting unit is constructed. See, Petition, p. 60 (top); Ex. 1006 at [0064], and e.g., Fig. 3. While Mueller states

that “a given lighting unit optionally may be associated with (e.g., include, be coupled to and/or packaged together with) various other components (e.g., control circuitry),” there is nothing disclosing that the lighting source has all components onboard a T12 or T8 tubular format. As recited in Claim element 1[f], the T12 format is narrow (41 mm).

Even if it is accepted for purposes of argument that one might try to construct a tubular LED luminaire with five different colors of LEDs onboard, designing such a luminaire with an onboard LED driver in the form factor of T12 or T8 would not have been obvious due to limited space. See, Ex. 2003 at Abstract (LED lighting device) and at [0012] (“fluorescent lighting systems are generally tube-shaped, which can limit the lighting configuration or mounting options.”) See, also Exs. 2003 and 2002 (first page) (regarding Mac Tech’s teaching away from multiple LED colors on a tubular luminaire).

Moreover, the one linear tube shown in Mueller has no details concerning its construction. See, Ex. 1006 at Fig. 3 (element 302). All that is shown on the linear element of Fig. 3 are LEDs. Ex. 1006 at Fig. 3; see also, Fig. 1 (light sources 104A to 104D, i.e., LEDs as disclosed at [0155]). A POSITA would have no direction as to how to construct such a luminaire, and in particular, one which would be suitable for image recording, which would include broad-spectrum white light, would also not have been obvious, given that the presence of colored LEDs would appear to obviate

the need for broad-spectrum white light.

Mueller also lacks an onboard driver.

To make up for Kit's lack of an onboard LED driver, the Petition cites to Ansems. Petition, p. 60 (top); Ex. 1007 at 4:8-24. Ansems discloses a "Single Chip LED As Compact Color Variable Light Source." Ex. 1007 at Title. Ansems lacks any disclosure about where the LED driver is located. Ex. 1007 at 4:8-24. Nor does Ansems have any disclosure of a luminaire in a tube shape such as a T12 or T8 or whether his alleged matrix would even fit on a T12 or T8 tubular luminaire. Accordingly, there would be insufficient direction to a POSITA to achieve such a luminaire. There would be no suggestion of such a modification to Mueller and no reasonable expectation of the success of any invalidity argument based on such a modification.

3. There Is No Likelihood of Success of Mueller in View of Ivey and Ansems on Dependent Claims 3-4 and 10-11

a. Claim 3 (255 Different Colors)

Claim 3 depends on claim 1 and recites that the LED lighting device's "LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements in **increments of about 1/255** to selectively produce at least 255 different colors from the lighting device." Ex. 1001 at claim 3 (emphasis added). The Petition cites the same group of prior art in arguing that claim 3 would have been obvious as proposed against claim 1. However, claim 3

would not have been obvious.

As noted above, the purpose of incrementing in $1/255$ to obtain 255 different colors is to match the color wheel used in the entertainment industry. Ex. 1 at e.g., 23:1-17. There is no disclosure in Mueller or any of the other cited references that would yield this number or that would direct a POSITA to a color wheel. The Petition cites to Mueller for RGBAW LEDs, but as explained above in discussing claim 1, Mueller's laundry list does not disclose or teach the combined RGBAW embodiment with broad-spectrum white light.

Even assuming for purposes of argument that an RGBAW embodiment using broad-spectrum white light would have been obvious, there is no teaching of production of incrementing in $1/255$ to match the 255 number of colors on the color wheel.

In the Petition, it is asserted that Mueller's LED driver is adapted to selectively drive five sets of LEDs in increments of $1/255$, but nowhere does Mueller disclose that. See, Petition, p. 63 (bottom). Rather than cite to Mueller for this proposition, the Petition cites to the Holmes Declaration. Petition, p. 63, (last line); Ex. 1003 at ¶s 419-420. However, these paragraphs in the Holmes Declaration are conclusory. The only citation to Mueller in Holmes is paragraphs [0183], [0158] and [0043]. Holmes Declaration, ¶ 420 (citing to Ex. 1006 at [0183], [0158] and [0043]). Mueller paragraph [0043] merely has a laundry list of possible LED colors. Ex. 1006 at

[0043]. Mueller paragraph [0158] only refers to use of PWM channels and generating millions of colors, but nowhere is there mention of an incrementation of 1/255 to match the color wheel. Ex. 1006 at [0158]. Mueller paragraph [0183] only mentions DMX control, and again nowhere is there mention of an incrementation of 1/255 to match the color wheel. Ex. 1006 at [0183].

Further, the Holmes Declaration provides nothing more than asserting a hypothetical capability, because the words “can” and “could” are used in support. Ex. 1003 at ¶420 (p. 162, end of third line “can” and beginning of 7th line “could”).

There is no disclosure or suggestion of the claimed 1/255 incrementation in Mueller or any of the cited references.

b. Claim 4 (255 Colors to Match Color Wheel)

Claim 4 depends on claim 3 and so would not have been obvious from the proposed combination for the same reasons as set forth with respect to claim 3 above. Moreover, claim 4 incorporates use of a computer console or lighting control board and expressly refers to the “LED driver ...adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements ... to selectively produce the at least 255 different colors of [a] **color wheel**.” Ex. 1001, claim 4 (emphasis added). There is no disclosure in Mueller or any of the other cited references that would teach operating the driver this way.

c. Claim 10 (RGBAW)

This claim depends on claim 1 and adds that in addition to the broad-spectrum white light set of LEDs, the other four sets are “red, green, blue and amber.” The cited references do not refer to this combination of colored LEDs and white LED. The Petition argues that Mueller discloses all of these colors and more. Petition, p. 65 (bottom) to p. 66 (top) and Ex. 1006 at [0043]-[0051] and [0194]. Mueller’s laundry list of colors and laundry list of form factors does not guide a POSITA to this RGBAW combination including broad-spectrum white light and in a T12 fluorescent form factor. See *Bayer Schering Pharma AG v. Barr Labs., Inc.*, 575 F.3d 1341, 1347 (Fed. Cir. 2009) (“[A]n invention would not have been obvious to try when the inventor would have had to try all possibilities in a field unreduced by direction of the prior art.” And, “an invention is not obvious to try where vague prior art does not guide an inventor toward a particular solution.”)

d. Claim 11 (Daylight and Tungsten)

This claim depends on claim 1 and adds that “among the colors the driver is configured to selectively produce are white light in each of **daylight and tungsten temperature ranges**” in the claimed combination with broad-spectrum white light as well as multiple colors of LEDs and a tubular format, suitable for commercial image

recording. Ex. 1001, claim 11 (emphasis added). These two ranges are very commonly used in the entertainment industry. The combination of these two ranges in the lighting device of claim 1, in addition to colors, would not have been obvious.

While Mueller may disclose a color temperature range of 700K to 10,000K, there is no teaching, suggestion or motivation to use the specific daylight and tungsten temperature ranges of broad-spectrum white light in a luminaire combined with LEDs that are producing colors as recited in claim 11/1. The Petition cites to three paragraphs of Mueller. See, Petition p. 66 (middle) and Ex. 1006 at [0194] and [0062]-[0063]. Mueller, in paragraph [0194], has no mention of any specific color temperature ranges of white light. Ex. 1006 at [0194]. Mueller, at paragraph [0062], only refers to the broad range of 700K to 10,000K, and paragraph [0063] is only discussing temperatures that provide various color tints. Ex. 1006 at [0062]-[0063]. There is no guidance to putting the claimed color temperature ranges together with the other claimed elements. There is no guidance to a POSITA to pick and choose the claimed elements in combination without the use of hindsight.

The Holmes Declaration adds nothing to Mueller as Holmes merely cites to the same paragraphs of Mueller as cited in the Petition and makes conclusory statements about them. Ex. 1003 at ¶s 437-438.

Moreover, there is no reasonable motivation to add to different types of white light into a colored LED luminaire of Mueller.

A. The Challenged Claims in Ground 2 Are Not Obvious

1. Independent claims 13, 23 and 35

Independent claims 13, 23 and 35 incorporate the same or substantially similar elements as in Claim 1, and therefore it is submitted that Petitioner has not shown a likelihood of success for the same or substantially the same reasons as for claim 1 discussed above.

a. Dependent claims 25 and 37 (255 Different Colors)

Dependent claims 25 and 37 depend on independent claims 23 and 35, respectively. The subject matter of claims 25 and 37 are substantially similar to dependent claim 3 and therefore the arguments with respect to claim 3 apply equally to these claims.

b. Dependent claims 26, 38, 39 (255 Colors to Match Color Wheel)

Dependent claims 26 and 38 depend on dependent claims 25 and 37. Dependent claim 39 depends on dependent claim 36. The subject matter of claims 26 and 38 is substantially similar to dependent claim 4. The subject matter of claim 39 is similar to the subject matter recited in claim 4. Therefore the arguments with respect

to claim 4 apply to these claims as well.

c. Dependent claim 32 (RGBAW)

Dependent claim 32 depends on claim 23. The subject matter of claim 32 is substantially similar to dependent claim 10 and therefore the arguments with respect to claim 10 applies equally to this claim.

**VII. SECONDARY CONSIDERATIONS EMPHASIZE
NONOBVIOUSNESS**

Secondary considerations include whether the claimed invention has been commercially successful, whether it solved a long-felt but unsolved need in the art, and whether the relevant industry praised it. See *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18, 86 S. Ct. 684, 15 L. Ed. 2d 545 (1966). To be relevant, such a secondary consideration must have a “legally and factually sufficient connection” (nexus) to the claimed invention. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed.Cir. 2019).

A. Nexus

If a patentee shows that asserted evidence is tied to a specific product and that product "is the invention disclosed and claimed," there is a rebuttable presumption of nexus. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392

(Fed.Cir. 1988). That is, presuming nexus is appropriate "when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’" *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed.Cir. 2018) (quoting *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed.Cir. 2000)).

A nexus analysis need not be limited to a discussion of only novel features. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1330 (Fed.Cir. 2016) (“proof of nexus is not limited to only when objective evidence is tied to the supposedly ‘new’ feature(s)”). It is instead important to consider “the invention as a whole,” rather than on a “limitation-by-limitation” basis. *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1377 (Fed.Cir. 2021).

1. Quasar’s Rainbow/Rainbow 2 Model Is Co-Extensive with the Claims

Quasar’s Rainbow/Rainbow 2 model is co-extensive with the claims and therefore entitled to a presumption of nexus. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed.Cir. 2019).

Quasar’s Rainbow/Rainbow 2 model embodies ‘224 Patent claim 1 as well as many others. Ex.2009 (Hoffman Decl.), ¶6; (Ex. 2014, Infringement Contentions, PDF4-40). Therefore, nexus is presumed, and "the burden shifts to the party asserting

obviousness to present evidence to rebut the presumed nexus." *Fox Factory*, 944 F.3d at 1373.

Further, the combination of novel and nonobvious elements Petitioner QUASAR's Rainbow/Rainbow 2 model was born by copying Patent Owner Colt's multicolored light embodying the claimed invention. Specifically, Old Quasar had a manufacturer Mr. Zhang of Laysion copy it. Ex. 2015, Declaration of Mr. Zhang, ¶5 ("I also duplicated Colt Led color tube for Quasar..." and Ex. 2009, ¶7 (Hoffman Decl.). *Kinetic Concepts, Inc. v. Smith 7 Nephew, Inc.*, 668 F.3d 1342, 1370 (Fed. Cir. 2012) (copying of "the system" covered by the patent relevant, not just copying of the patent itself). Old Quasar had also previously had Mr. Zhang copy another of Colt's products, the bicolor tubular luminaire. Ex. 2015, ¶s1-4.

2. Even If Presumed Nexus Is Not Present, There Is Nexus

Even if, for purposes of argument, Colt has not shown that the products are co-extensive with the claimed invention, nexus is still present. In addition to copying showing nexus, marketing materials for Petitioner QUASAR's and its predecessor Old Quasar's Rainbow models promote patented features which are novel. A novel combination of the '224 Patent includes the below elements (using element numbering of the Petition's Claim Appendix (Petition, pp. ix-x):

1[pre] An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

1[c] an array of LED emitting devices...configured to emit five different colors...: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range

1[e] recites “an LED driver ... configured to selectively provide electrical power to the array of LED emitting devices

1[f] wherein the housing has a linear form factor substantially that of a fluorescent tube having an axial direction and having a diameter of no greater than about 41 mm....”

Ex. 1001 at claim 1; Petition at ix-x.

Petitioner Quasar’s marketing materials promote the Rainbow models with a combination of warm LEDs and cool LEDs (“Candlelight diode (2000K) and Daylight diode (6000K)” and “RGB: A rainbow of color at your finger tips [having] a full 360° palette” Ex. 2016 at PDF2, first and second paragraphs under “Features.” The photo on the first page shows that it is a tubular luminaire. Ex. 2016 at PDF1.

The Rainbow 2 is similar. Ex. 2017 at PDF1 (“R2” model is the Rainbow 2).

It is a tubular luminaire with “Highly accurate white light... CRI up to 95.” (Ex. 2017 PDF1, bottom left). The light produces “intense, high quality tunable white light or rich saturated RGB color [and] Rainbow 2 (R2) ... will become the workhorses of your set.” Ex. 2017 at PDF1 (first paragraph). The light is clearly promoted as having at least five color LEDs, at least one of which is white producing many colors suitable for commercial image recording. The section called “Color Science” promotes the “RGBX” (red, green, blue, and “X” stands for one cool white LED and one warm white/amber LED). See, Ex. 2016 at PDF2 (“X-fade White Light: Crossfading our Candlelight diode (2000K) and Daylight diode (6000K)...”); also Ex. 2017 at PDF3 in the “Color Science” section re RGBX producing “more than one billion colors.”

Important elements of dependent claims in the ‘224 Patent are also present and promoted by Petitioner QUASAR for the Rainbow series. Dependent claims 3 and 4 of the ‘224 Patent recite producing “at least 255 different colors” and “at least 255 different colors of an entertainment industry color wheel,” respectively. ‘224 Patent, claims 3 and 4. Petitioner Quasar’s marketing materials promote the Rainbow as providing many different colors including the full 360° palette: “RGB: A rainbow of color at your finger tips [having] a full 360° palette” Ex. 2016 at PDF2, first and second paragraphs under “Features.” To obtain at least the 255 colors of the color wheel in a tubular luminaire makes the light very useful and

adaptable for the TV and film industry. See, Ex. 1001, Col. 7, lines 19-27.

Dependent claim 11 recites that the lighting device produces “white light in each of daylight and tungsten temperature ranges.” Ex. 1001, claim 11. This enables versatile use in the tubular lighting device in the commercial image recording industry as scenes are commonly shot in either daylight (cool) or tungsten (warm) which makes it very quick and easy to change lighting for different TV or movie scenes. See ‘224 Patent, Ex. 1001, e.g., Col. 2, lines 1-16.

Petitioner Quasar’s marketing materials promote the Rainbow models ability to produce warm (tungsten) white and cool (daylight) white: “Candlelight diode (2000K) and Daylight diode (6000K). . . .” Ex. 2016 at PDF2, first paragraph under “Features.” This marketing emphasizes the importance and desirability of producing tungsten and daylight white from the same tubular luminaire.

The ‘224 Patent claims 1 and 3-4 (among others) the above novel combinations of elements. Such combinations are absent from the applied prior art and from any single reference thereof.

Accordingly, Quasar’s S-Switch products come within the claims and Colt is entitled to a presumption of nexus.

As shown above with regard to the marketing materials and the declaration evidence, the features that are marketed and desirable are those of the claimed invention,

Moreover, Petitioner QUASAR's Rainbow series was born by copying Patent Owner Colt's multicolored light embodying the claimed invention. Specifically, Old Quasar had a manufacturer Mr. Zhang of Laysion copy it. Ex. 2015, Declaration of Mr. Zhang, ¶5 ("I also duplicated Colt Led color tube for Quasar...." and Ex. 2009, ¶7. *Kinetic Concepts, Inc. v. Smith 7 Nephew, Inc.*, 668 F.3d 1342, 1370 (Fed. Cir. 2012) (copying of "the system" covered by the patent relevant, not just copying of the patent itself). Old Quasar had also previously had Mr. Zhang copy another of Colt's products, the bicolor tubular luminaire. Ex. 2015, ¶s1-4.

B. Old Quasar Copied Colt's RGBAW

"[A]lthough copying is not alone dispositive of nonobviousness, we have usually considered a determination of copying to be "strong evidence of nonobviousness." *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1099 (Fed.Cir. 1985), *cert. granted*, judgment vacated on other grounds, 475 U.S. 809 (1986)." The Federal Circuit has maintained that copying is "often...the **most probative and cogent evidence** of nonobviousness." *Advanced Display Sys. v. Kent State Univ.*, 212 F.3d 1272, 1285 (Fed.Cir. 2000)(emphasis added).

As shown in the immediately prior section (C.5.), Petitioner's predecessor Old Quasar tried to make a bicolor LED tube, but it could not make a good one. Ex.2023, P.21,Ls.7-19, P.14,L.10 - p.16,L.10 (emphasis added) and see **photos of Colt's**

product at PDF 94-95.

1. Old Quasar obtained Colt's Bicolor from Paramount

That Old Quasar, through one of its principals, Mr. Ray Gonzalez, obtained some of Colt's Bicolor LED Tubes in 2013 from Paramount by asking to borrow them (but never returning them) is confirmed by Mr. Silva. Ex.2025, ¶s15-18. In 2013, Ray Gonzalez "borrowed" some of Colt's Bicolor LED Tubes stating the purpose was to show some clients to potential rent the tubes from Paramount and he said he would return them in about a week. Id. ¶15. But he never returned the tubes. ¶17. Mr. Silva later learned that Ray Gonzalez was a cofounder of Old Quasar. Ex.2025, ¶18.

2. Old Quasar Copied Colt's Bicolor

Old Quasar first copied Colt's "Bicolor" product. Principals of Old Quasar gave the product samples they borrowed from Paramount to their manufacturer Laysion (Mr. Zhang) and instructed him to copy it. Ex.2015, ¶s 1-4; Ex.2024, ¶s 4-9; Ex.2023 (quoted below).

The Zhang Declaration shows that principals of Old QUASAR (including Mr. Andy Lau and Mr. Ray Gonzalez) brought COLT's product to Laysion, Mr. Zhang's company, to copy and he did copy it:

1. I am the owner of Laysion.... My company designs and manufactures LED lights....
2. In approximately **2013**, I met a man I know as **Ray Gonzalez**,

who is associated with a company known as Quasar Science. He was with ... **Andy Lau**... with Quasar....

3. **Mr. Gonzalez** had a lighting tube **T-12 bi-color with the name Colt**

4. Mr. Gonzalez asked me if I could duplicate tube. **We examined and analyzed the tube and figured out how to make a copy of the tube.** I then manufactured approximately 10,000 pcs T12 bi-color for Mr. Gonzalez and Quasar.

Ex.2015, ¶s 1-4; Ex.2024, ¶s 4-9 (Zhang's oral admissions verifying Zhang Decl.); Ex.2023 (Zhang Depo Transcript), PDF 94-95.

That Zhang copied Colt's Bicolor LED Tubular Light for Old Quasar is well supported by his 2018 deposition testimony admitting receiving Colt's product from Old Quasar's principal and being instructed to copy it:

[Transcript, p.14:L.10-p.16:L.10]

Q. ... so you produced product for Mr. Lau for a while?

A. (In English) You mean Andy?

Q. Yes.

A. (In English) Andy? Yes.

* * *

Q. ... do you recall what the pictures included?

A. ... A lighting tube.

Q. Then, you ... got a sample from ... Andy Lau?

A. Yes.

* * *

Q Okay. Can you describe what parts ... you took apart?

A There is a switch that you turn on/off.

Q On/off?

A Not on/off. Switch for color switching.

Q Color of the lights?

A Correct.

* * *

[Transcript, p.17:Ls.23-25]

Q. What range of time did you make lighting tubes for Quasar Science?

A. (In English) 2013 to 2017.

* * *

[Transcript, p.21:L.20–p.23:L.17]

Q Let me hand you what we call Exhibit 3... And 4....

* * *

[Transcript, p.22:Ls.3-25]

THE WITNESS: This is the chatting record between our company's general manager and Alex – Alex Su, S-U.

BY MR. CUNNINGHAM:

Q And I see that --

A This is the input right here. This is the sample we got at the time.

* * *

Q And I see the word "Colt LED" in the chat message immediately below the photos on Exhibit 3.

A ...You mean this one, "Colt LED"?

Q Yes. Can you read what that chat message says right there?

A "Is this Colt LED product"?

* * *

[Transcript, p.23]

BY MR. CUNNINGHAM:

Q And you're referring to Exhibit 3; correct?

A Yes.

* * *

Q So the photo immediately above the chat message that says "Colt LED" in English is the sample that you received from Andy Lau; is that correct?

A Yes....

* * *

[Transcript, p.25:Ls.21-25]

Q. Okay. Did Andy Lau provide you and your company **more than one tube to take apart and copy?**

A. Yes

Ex. 2023, at p.14:L.10 - p.16:L.10; p.17:Ls.23-25; p.21:L.20 – p.23:L.17; p.22-23; and p.25:Ls.21-25 and Exhibits 3 and 4 thereto (showing **photos of Colt's Bicolor LED Tube Lights disassembled**) (Ex.2023, **PDF 94-95** - showing text messages with photos of Colt's product)(emphasis added); Ex.2024, ¶s 4-9; Ex.2022 (authenticating Ex.2023).

That the disassembled products in Exhibits 3-4 of the Zhang deposition transcript are Colt's 2013 switchable bicolor LED tube lights is confirmed by Mr. Macias. Ex.2024, ¶6 ("I know the LED lights shown in the above photos [in

paragraph 25] were Colt's Bicolor LED Tubes because I recognize all of the following as from the 20 to 30 sample tubes that I gave to Paramount in 2013." And then paragraph 26 continues to set forth the elements Mr. Macias recognizes.)

That Mr. Andy Lau was with Old Quasar is confirmed by Mr. Zhang's deposition transcript. Ex.2023, p.71:Ln.8-12.

3. Old Quasar Copied Colt's RGBAW

When Patent Owner Colt introduced its "RGBAW" product (which embodies the present claims) into the marketplace, Old Quasar copied that. Copying was admitted by Old Quasar's manufacturer. Ex.2024, ¶5: "I also duplicated Colt Led color tube for Quasar...." *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1099 (Fed.Cir. 1985), cert. granted, judgment vacated on other grounds, 475 U.S. 809 (1986)(Copying, though not dispositive, is "strong evidence of nonobviousness.")

C. Colt's '224 Patent's Products Embodied As Quasar's Rainbow/Rainbow 2 Models Are a Commercial Success

Petitioner Quasar's revenue from April 9, 2021 to the end of 2023 for its Rainbow/Rainbow 2 Models was [REDACTED] in just a little over 2.5 years. Ex.2021, charts at pp. 7-8 (responses to Interrogatories 1 and 2). If one considers that Hollywood was shut down due to the Writers' Guild of America and the Screen Actors' Guild striking much of the year, these sales are quite significant. Ex.2026,

PDF 1 (see chart of “shoot days” in 2023 vs. 2023, first three quarters).

VIII. CONCLUSION

For the reasons above, the Board should issue judgment in favor of Patent Owner because the Petition fails to show the requisite chance of success.

Dated: February 8, 2024

Respectfully submitted,

/David L. Hoffman/

David L. Hoffman, Reg. No.
32,469, Lead counsel for Patent
Owner Colt

CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(b)(1)

I, the undersigned, do hereby certify that the foregoing Patent Owner Preliminary Response, including footnotes and appendices, contains no more than 14,000 words (but excluding the table of contents, table of authorities, and certificate of service or word count) as measured by the Word Count function of Microsoft Word as specified by 37 C.F.R. § 42.24(b)(1).

/David L. Hoffman/

David L. Hoffman

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **PATENT OWNER'S RESPONSE** was served on February 8, 2024, via email directed to counsel of record for Petitioner at the following:

David M. Magee at David.Magee@gtlaw.com
Greenberg Traurig, LLP
One International Place, Suite 2000
Boston, MA 02110

Trenton Ward (Reg. No. 59,157) at trenton.ward@gtlaw.com
Greenberg Traurig, LLP
Terminus 200
3333 Piedmont Road NE, Suite 2500
Atlanta, GA 30305

Date: February 8, 2024

Respectfully submitted,
NOLAN HEIMANN LLP
Attorneys for the Patent Owner
/David L. Hoffman/
David L. Hoffman, Reg. No. 32,469

David L. Hoffman
(Reg. No. 32,469)
dhoffman@nolanheimann.com

Nolan Heimann LLP
16000 Ventura Blvd., Suite 1200
Encino, CA 91436

Direct 818-946-1158