

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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QUASAR SCIENCE LLC  
Petitioner,

v.

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

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Case: IPR2023-00614  
U.S. Patent No. 10,566,895

DECLARATION OF BRUCE L. FINN

## **I. INTRODUCTION**

1. My name is Bruce L. Finn. I am making this declaration at the request of Colt LED in IPR2023-00613 and IPR2023-00614, involving Patent Owner Colt International Clothing, Inc. D/B/A Colt LED (“Colt” or “Patent Owner”) brought by Petitioner Quasar Science LLC (“Quasar” or “Petitioner”) regarding U.S. Patent Nos. 10,411,582 and 10,566,895 (“the ‘582 and ‘895 Patents”)

2. I am being compensated for my work in this matter at the rate of \$200/hour. My compensation is not contingent on the outcome of this matter or the specifics of my testimony.

3. In this declaration, I have been asked to provide my expert opinions and factual experiences and insights regarding the suitability of LED-based tubular lighting systems intended for the film and television lighting industry in and around the priority date of the ‘582 and ‘895 Patents.

## **II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE**

4. The following provides an overview of some of my experience that is relevant to the matters set forth in this declaration.

5. As described in my curriculum vitae, I am a Director of Photography with more than 35 years of combined film/television industry and academic experience and, in particular, including lighting for television, where I directed the on-set lighting on more than a hundred major television network episodes and pilots.

6. I have also been teaching film and television production and lighting since 2016. I presently serve as the Cinematography Professor at Idyllwild Arts Academy in Idyllwild, CA

7. Prior to this position, I have been a Cinematography Professor at the USC School of Cinematic Arts Los Angeles, CA (2016-2020); Cinematography Professor at Chapman University in Orange, CA (2018-2023); and Cinematography Professor at Academy of Art University in San Francisco, CA (2018-2023).

8. I majored in Photography and Video at Antioch College, Yellow Springs Ohio

9. I am the co-author of the book *Multi-Camera Cinematography For TV/Video: The Art & Craft Of Lighting And Camera Work For Multiple Camera Image Capture*, Bloomsbury Publishing Inc. Publishing date March, 2024.

10. I have received numerous awards for my work, including the two EMMY Awards for Cinematography, and an EMMY Award Plaque for the design of lighting equipment.

11. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. In forming my opinions, I have relied on my knowledge and experience in directing, developing, researching, and teaching film and television lighting.

12. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. I understand that a copy of my current curriculum vitae, which details my education and professional and academic experience, is being submitted by Petitioner as Addendum A.

### **III. PERSON OF ORDINARY SKILL IN THE ART**

13. My opinions in this declaration are based on the understandings of a person of ordinary skill in the art, which I understand is sometimes referred to as an “ordinary artisan” or by the acronym “**POSITA**” (person of ordinary skill in the art), as of the time of

the invention. For the purposes of this Declaration, I have been informed to assume a date of invention of May 17, 2013. I understand that the person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention.

14. I have reviewed Petitioner's definition of the POSITA, which is "[A] person of ordinary skill in the art relevant to the '582 and '895 Patents at the time of the invention would have had, at a minimum, a Bachelor of Science degree in electrical engineering, or a closely related field, and two or more years of experience in the design of entertainment lighting systems, along with the design and use of LED lights."

15. I have also reviewed Patent Holder's definition of the POSITA, which is "[A] person of ordinary skill in the art relevant to the '582 and '895 Patents at the time of the invention would have had 2 to 4 years' experience in electrical engineering/design of film and television lighting systems, including the design and use of LED lights, combined with two to three years of work experience as a set lighting technician in television and/or motion picture industry."

16. My conclusions in this report would not change if I were to apply Petitioner's or Patent Owner's definitions of a POSITA.

17. Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSITA as of that priority date.

#### **IV. BACKGROUND**

18. In forming my opinions expressed in this Declaration, I reviewed the Petition and at least the following materials and information as well as any materials and other exhibits referenced herein:

| Exhibit No. | Exhibit Description                                      |
|-------------|----------------------------------------------------------|
| 1001        | U.S. Patent No. 10,411,582 to Macias (“the ’582 Patent”) |
| 1004        | U.S. Patent No. 7,507,001 to Kit (“Kit”)                 |
| 1005        | U.S. Patent No. 7,350,936 to Ducharme et al (“Ducharme”) |

19. I reserve the right to supplement my opinions in this Declaration to address any new information obtained in the course of this proceeding or based on any new positions taken by the Petitioner.

20. As discussed below, I understand that Petitioner Quasar contends that the Ducharme reference teaches location lighting using an LED retrofits tubes for providing white light in a form factor of a **fluorescent light** (Petition at 51–52), which is **suitable for commercial image recording** (*Id.* at 52)(emphasis added). See also Petitioner’s Exhibit 1003 at ¶63 “[a]n energy saving device for an LED lamp mounted to an existing fixture for a fluorescent lamp where the ballast is removed or bypassed.” (quoting Ex. 1004 at Cover Page, Abstract).

21. Conversely, the ’582 and ’895 Patents generally teach a standalone (complete) lighting fixture, including integrated power controller—see, e.g., ’582 Patent Abstract “A preferred embodiment includes a first and second group of LEDs ... having substantially the same size and dimensions as a traditional fluorescent lamp tube *and a control box for controlling power input* and power gain to the first, second, or both groups of LEDs.” (emphasis added).

22. Except as otherwise noted, I have been asked to consider if Petitioner’s assertions including Ducharme’s teaching of location lighting using an LED retrofits tubes is **suitable for commercial image recording** at the time of the invention.

## **V. ANALYSIS AND OPINIONS**

23. First, a person of ordinary skill would have known that claiming a light is “suitable” for film/TV does *not* make it so. The mere fact that the combination might have been assembled does not mean that an ordinarily skilled artisan in the film and television industry would have been *motivated* to make the combination.

24. For example, it was well known in film and television lighting that time and cost is at the heart of virtually all productions.

25. Envision a filming location within a retail store, featuring numerous high-ceiling fluorescent fixtures. One normally skilled in the art knows that to exchange hundreds of fluorescent tubes for LED retrofit tubes on location was unsuitable. For example, a film production company would be required to enlist separate electricians to wire past or remove ballasts “*..retrofit LED lamps... powered directly from line voltage... where the ballast is removed or bypassed.*” (Kit 1: 32-36), usually accessible only with expensive telescoping manlifts.

26. More specifically, shifting to Retrofit T8 or T12 LED lamps involves fixture modification for tube installation and rewiring to bypass redundant fluorescent power and control gear. This intricate process demands the expertise of a licensed electrician and carries the risk of voiding the original manufacturer's warranty. On-set lighting technicians are typically not licensed electricians.

27. The associated costs for implementing and reversing this procedure (only a few hours later) are prohibitively high, with potential closures of the retail establishment adding to production expenses.

28. Additionally, a POSITA would have known that many of the same prohibitive costs and lack of motivation also exist for LED retrofits that act in a plug-and-play fashion

(LED tubes that use the *existing* fluorescent ballasts to power the LED tubes)—see, e.g., Ducharme 5:18-26 “.. a [drop-in replacement] lighting fixture to be used in a lamp designed to take fluorescent tubes, ... having a connector...[to] receive power from the lamp...**[using] ballast voltage to power...the LEDs.**” (emphasis added).

29. With ‘plug-and-play’ LED retrofit tubes, all electronics are housed within *including* complex LED drivers needed to adapt to many different types of ballasts—see, e.g., Ducharme at 28:61-63 “*The ballast (2410) maybe a magnetic type or electronic type ballast for supplying the power to at least one tube (2404) which has traditionally been a fluorescent tube.*”

30. As a result of the heat-producing circuit components (including LED drivers) being placed in the *restrictive* space inside the tube, excess heat is generated with poor thermal management (e.g., limited heat-sinking and heat-trapping enclosed fluorescent housings). The high temperatures reduce the performance of the components. While this may not be a problem in consumer applications, a person of ordinary skill in the art at the time of the invention would have known that high temperatures have a considerable negative impact on the color fidelity of the LEDs, including color shifts and loss of CRI. High reliability is critical in film and television lighting—but it was common knowledge that such ‘plug-and-play’ LED retrofits were not reliable, as illustrated below:

commentary



## Are LED retrofits that work with existing ballasts a good idea?

**M**y answer is that **I'm not so sure it's a good idea**, but I fully expect broader availability of LED-based tubes and lamps that work with existing fluorescent or high-intensity discharge (HID) ballasts. Line-powered LED replacement lamps including A-lamps will be the most broadly installed solid-state lighting (SSL) products in the near term — despite the fact that lighting experts will tell you that integral luminaires are superior in terms of aesthetics, light quality, efficiency, and reliability. **Lamps or tubes that work with an installed ballast are compromised to a greater degree in terms of reliability and efficiency.**

of the choice. The existing ballast does represent an additional point of failure. Proponents of the technology will tell you that state-of-the-art ballasts will last virtually as long as LED lamps, especially since the ballasts operate at far lower temperatures while supplying a lesser power load to LED lamps.

But what are the chances that the fixture, into which you install a new replacement lamp or tube, also has a state-of-the-art ballast? I'd say near zero. Had facility management upgraded a building's fluorescent lighting recently, for instance, they wouldn't already be considering an LED tube or lamp. More likely that existing ballast is five, ten, or



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LED tubes perceived as *unreliable* (Exhibit 2050, LED Magazine June 2014 pg. 4) (emphasis

31. Accordingly, a POSITA at the time of the invention would have perceived Ducharme's proposals as unsuitable for commercial image capture—i.e., unreliable. Thus, Ducharme's suggestions to try were impractical, unreliable, and expensive, and would therefore be ignored in the context a lighting suitable for film and TV lighting (i.e., unsuitable for commercial image recording).

32. Conversely, at the time of the invention, it was basic common sense for the skilled artisan to quickly light locations with ground-based high-output, high-CRI 18,000-watt HMI film lights (versus retrofitting hundreds of overhead fluorescents for a shoot *lasting a few hours*).

33. These 18,000-watt "HMI" lights were so powerful, for example, that they could be "bounced" off ceilings in a retail environment and produce light values equaling or exceeding the existing ceiling mounted fluorescents. This made turning off or simply overpowering the poor CRI existing ceiling lights with this powerful high CRI light source

a much faster and versatile solution to changing hundreds of fluorescent tubes on location.

34. In addition, it was also common practice (and common sense) when filming on a location with existing fluorescent lighting to add green (via gel) to the high-wattage HMI's lights so they would match the existing lighting in the environment. For example, two high-powered HMI lights could be gelled in just a few minutes. Then the overall green bias (which was now consistent between the existing lights and the added motion picture lights) could then be easily (and globally) be corrected in camera or in post-production. This was (and still is) the commonsense solution to location lighting.

35. Given the extremely high hourly costs of film and TV production, the use and associated high cost of using *unreliable* LED retrofit tubes would have been considered by the POSITA as unsuitable. In my opinion, any suggestion otherwise lacks the knowledge and mindset of a person of ordinary skill in the art at the time.

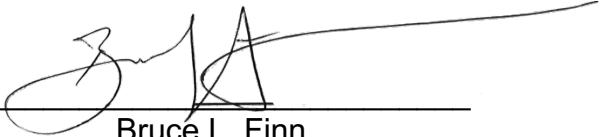
36. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

37. In signing this Declaration, I understand that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in the case and that cross-examination will take place within the United

States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

I declare under penalty of perjury that the following is true and correct.

Executed on February 6th, 2024.



Bruce L. Finn

## **APPENDIX A**

BRUCE FINN  
DIRECTOR OF PHOTOGRAPHY

Director of Photography on more than a hundred Major Television Network Episodes and some of the World's Most Famous Hologram's including Michael Jackson "Slave to the Rhythm".

AWARDS

|                     |               |                    |               |
|---------------------|---------------|--------------------|---------------|
| EMMY Cinematography | Multi Camera  | "8 Simple Rules"   | ABC Primetime |
| EMMY Cinematography | Single Camera | "My Indian Summer" | CBS Daytime   |

PROFESSIONAL EXPERIENCE

Production Cameraman Editor

RKO East

Commercial Production Company division of WNAC-TV

Boston Mass

1979-1982

Clients included, Jordan Marsh, Star Market, Armorcote Pans (Dial Media) JB Door & Sash

Lighting Director/Cameraman (Freelance)

Boston, Mass

Clients included : Digital Equipment Corporation, Wang, VizWiz, Century III, Jerry Adler

1983-1986

Director of Photography (Freelance)

Los Angeles, CA

Major Studios & Networks (credits attached)

1986- Present

Cinematography Professor

USC School of Cinematic Arts

Los Angeles, CA

2016-2020

Cinematography Professor

Chapman University

Orange, CA

2018-2023

Cinematography Professor

Academy of Art University

San Francisco, CA

2018-2023

Cinematography Professor

Idyllwild Arts Academy

Idyllwild, CA

2022-2023

## HOLOGRAMS

|                               |                  |                       |                        |
|-------------------------------|------------------|-----------------------|------------------------|
| BANGLADESH MILITARY MUSEUM    |                  | Prod: Ian O'Connell   | Dir: D. Faraway        |
| HER Concert at the Novo       | MWPEG            | Prod: Marji Schmidt   | Dir: Bill Sarine       |
| Mohamed Abdo                  | K Saudi Arabia   | Prod: Clare Spencer   | Dir: D. Faraway        |
| 2047 APOLOGUE                 | China Kingway    | Prod: Charlene Lee    | Dir: Zhang Yimou       |
| RONNIE JAMES DIOS             | Eyellusion       | Prod: J. Pezutti      | Dir: Chad Finnerty     |
| V-6 TOKYO                     | Hakuhodo Agency  | Prod: Ken Matsuzaki   | Dir: Shimizu Seiichiro |
| MICHAEL JACKSON               | Pulse Evolution  | Prod: Oualid Mouaness | Dir: Jamie King        |
| HARRY POTTER "GRINGOTTS" RIDE | Universal        | Prod: Debra Walker    | Dir: Thierry Coup      |
| ROSIE HUNTINGTON WHITELY      | Burberry         | London                | Dir: Mario Testino     |
| 2NE1                          | 4D Live Park     | Seoul, Korea          | Dir: D'Strict          |
| FERGIE, TABOO                 | NRJ Awards       | Paris                 | Dir: Musion            |
| JANET JACKSON                 | Essence Festival | New Orleans           | Dir: Steve Rehage      |
| WILL I AM                     |                  | London                | Dir: Musion            |

## TELEVISION

|                                      |                  |                        |                     |
|--------------------------------------|------------------|------------------------|---------------------|
| TWO MEN AND A BABY                   | Media Institute  | Prod: James Burns      | Dir: Rob Carpenter  |
| AMERICAN DROPOUT                     | Media Institute  | Prod: James Burns      | Dir: Rob Carpenter  |
| HOT BENCH (Open).                    | Downtown         | Prod: Steve Rockmael   | Dir: Dave Carr      |
| A NEW WAY OF LIFE PSA                | Women in Film    | Prod: C Jayaweera      | Dir: Mariya Pyter   |
| GODS OF THE ARENA THE DRAMEDY        | F&B              | Prod: Chloe Liu        | Dir: D Jan Ouschek  |
| ALS PSA "HELPING HANDS"              | Women in Film    | Prod: Maria Leicy      | Dir: Ora Yashar     |
| FOX Studios Set Services             | Beachglass Films | Prod: Doug Sarine      | Dir: Bill Sarine    |
| PYRVIEW (Commercial)                 | Me3 Productions  | Prod: Rebbecca Casey   | Dir: Alan Barber    |
| 4 G "Half Time" Ibiza (Pilot)        | Frames and Beats | Prod: DJan Ouschek     | Dir: Brian Roberts  |
| BUNKED (Pilot)                       | Disney Channel   | Prod: Cat Cambria      | Dir: N/A            |
| HOT IN CLEVELAND Promos              | N87 Creative     | Prod: Sarah Schoesler  | Dir: Rob Lawe       |
| GAMER'S GUIDE (Pilot)                | Disney Channel   | Prod: Coral Hawthorne  | Dir: N/A            |
| BENCHED (Promos)                     | Beantown Prods   | Prod: Steve Rockmael   | Dir: David Carr     |
| RACHEL RAY SHOW (Promos)             | Beantown Prods   | Prod: Steve Rockmael   | Dir: David Carr     |
| THE GAME (2 Seasons 44 episodes)     | BET Prods.       | Prod: Mara Brock Akil  | Dir: Bille Woodruff |
| LOVELIVES (Pilot)                    | Fox              | Prod: Barry Haley      | Dir: Rob Greenberg  |
| ARSENIO HALL SHOW Promo              | N87 Creative     | Prod: Sarah Schoesler  | Dir: Rob Lawe       |
| JEFF PROBST SHOW Open                | Beantown Prods   | Prod: Steve Rockmael   | Dir: David Carr     |
| LUCKY LOUIE* (Pilot)                 | HBO              | Prod: Leo Clarke       | Dir: Gary Halvorson |
| LUCKY LOUIE* (Series)                | HBO              | Prod: Leo Clarke       | Dir: A P Weyman     |
| STRANGE BREW (Pilot)                 | WB/FOX           | Prod: Kohan, Mutchnick | Dir: Marc Buckland  |
| THE FISH TANK (Pilot)                | Sony/CBS         | Prod: Goldsmith, Yuspa | Dir: Rob Greenberg  |
| BEST THING EVER (Pilot)              | ABC Studios/ABC  | Prod: Franco Bario     | Dir: Marc Buckland  |
| THE KARENSKY'S (Pilot)               | Universal/CBS    | Prod: Gail Berman      | Dir: Pam Fryman     |
| MIKE BIRBIGLIA'S SECRET P.J. (Pilot) | CBS              | Prod: Mike Birbiglia   | Dir: Rob Greenberg  |

|                         |     |                     |                    |
|-------------------------|-----|---------------------|--------------------|
| UNDER ONE ROOF* (Pilot) | CBC | Prod: Claude Brooks | Dir: Brian Roberts |
|-------------------------|-----|---------------------|--------------------|

|                                         |                 |                            |                      |
|-----------------------------------------|-----------------|----------------------------|----------------------|
| AMERICAN FAMILY (Pilot)                 | Sony/ABC        | Prod: Ronne, Schreick      | Dir: J. Fontenberry  |
| THE I.T. CROWD* (Pilot)                 | NBC Universal   | Prod: Guarascio, Port      | Dir: Gail Mancuso    |
| 8 SIMPLE RULES* (3 Seasons)             | Touchstone/ABC  | Prod: Alan Padula          | Dir: Jamie Widdoes   |
| JEFF GARLIN SHOW (Pilot)                | TBS             | Prod: John Whitman         | Dir: Gary Halvorson  |
| BLUE COLLAR COMEDY 3                    | Comedy Central  | Prod: Alan Blomquist       | Dir: C.B. Harding    |
| COOKED (Dane Cook, Pilot)               | Sony            | Prod: Linda Nieber         | Dir: David Steinberg |
| LEAP OF FAITH (Pilot & Series Season 1) | NBC             | Prod: Coral Hawthorne      | Dir: Alex Graves     |
| RON WHITE SHOW (Pilot)                  | Sony/The WB     | Prod: Vic Kaplan           | Dir: C.B. Harding    |
| NOBODY'S WATCHING (Pilot)               | NBC/The WB      | Prod: Randall Winston      | Dir: Gail Mancuso    |
| SWEDEN, OHIO (Pilot)                    | Warner Brps/FOX | Prod: Fritz, Malins        | Dir: Jamie Widdoes   |
| ERIC GILLILAND PROJECT (Pilot)          | USA             | Prod: Eric Gilliland       | Dir: Jay Sandrich    |
| THE HUGHLEY'S (4 Seasons)               | ABC Studios/UPN | Prod: Chris Rock           | Dir: Andy Cadiff     |
| ONE ON ONE (Series)                     | Paramount/UPN   | Prod: Greenblatt/Janollari | Dir: E. Gittelsohn   |
| MY ADVENTURES IN TV (Pilot)             | Touchstone/ABC  | Prod: David Baldy          | Dir: Ted Wass        |
| ALL ABOUT US (Pilot)                    | NBC             | Prod: Peter Engel          | Dir: Brian Roberts   |
| THE PETER PRINCIPLE (Pilot)             | WB/NBC          | Prod: John Riggi           | Dir: M. Lembeck      |
| HEY NEIGHBOR (Pilot)                    | Regency/FOX     | Prod: Black, Lennon        | Dir: S. Zuckerman    |
| JIM BREUER (Pilot)                      | Touchstone/ABC  | Prod: Jeff Kahn            | Dir: Brian Roberts   |
| THE JON LOVITZ SHOW (Pilot)             | Touchstone /ABC | Prod: Brillstein, Grey     | Dir: Andy Cadiff     |
| FIVE HOUSES (Pilot)                     | FOX             | Prod: Riggi, Wolf          | Dir: Todd Holland    |
| THE DAVE CHAPELLE PROJECT (Pilot)       | FOX             | Prod: Chappelle, Katz.     | Dir: Lee Shallat     |
| STYLE & SUBSTANCE (Series)              | Disney/CBS      | Prod: Peter Tolan          | Dir: Jay Sandrich    |
| RICKY JAY & 52 ASST'S (Special)         | HBO             | Prod: Mark Farrell         | Dir: David Mamet     |
| THE "A" LIST (Series)                   | Comedy Central  | Prod: Lorie Zaks           | Dir: Jerry Kramer    |
| MY INDIAN SUMMER (Special)              | CBS             | Prod: Scott Friedland      | Dir: John Behring    |
| BEAKMAN'S WORLD (Series)                | Sony            | Prod: Mark Waxman          | Dir: Jay Dubin       |

#### FEATURES

|                                   |                      |                      |                   |
|-----------------------------------|----------------------|----------------------|-------------------|
| CAPTIVITY (2nd unit reshoots)     | Lionsgate            | Prod: Damon, Konov   | Dir: Roland Joffe |
| WORD OF MOUTH                     | Universal            | Prod: Cauthen, White | Dir: Tom Lazarus  |
| BLUE COLLAR COMEDY TOUR THE MOVIE | WB                   | Prod: Alan Blomquist | Dir: C.B. Harding |
| NATURALLY NATIVE                  | Mashantucket Pequots | Prod: Jackson, Russo | Dir: V. Red Horse |

#### BOOKS

MULTI-CAMERA CINEMATOGRAPHY FOR TV/VIDEO: THE ART & CRAFT OF LIGHTING AND CAMERA WORK FOR MULTIPLE CAMERA IMAGE CAPTURE  
Co Author, Bloomsbury Publishing Inc. Publishing date 2023