IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CAO LIGHTING, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 20-680-MN
	)	
	)	
GENERAL ELECTRIC COMPANY, CONSUMER LIGHTING (U.S.), LLC d/b/a GE LIGHTING, and CURRENT LIGHTING SOLUTIONS, LLC	)	
	)	
Defendants.	)	

FIRST AMENDED COMPLAINT

Plaintiff CAO Lighting, Inc. ("CAO Lighting"), by and through its counsel, Barnes & Thornburg LLP, files this First Amended Complaint against Defendants General Electric Company, Consumer Lighting (U.S.), LLC (d/b/a GE Lighting), and Current Lighting Solutions, LLC (collectively "Defendants") and alleges as follows:

PRELIMINARY STATEMENT

1. This is a patent infringement action alleging that Defendants have infringed and continue to infringe one or more claims of U.S. Patent No. 6,465,961 (the '961 patent) and U.S. Patent No. 6,634,770 (the '770 patent). The '961 patent and '770 patent were previously asserted against GE Lighting in a lawsuit filed on May 10, 2011 by CAO Group, Inc. ("CAO Group"), the prior owner of the '961 and '770 patents, in the United States District Court for the District of Utah, Case No. 2:11-cv-426-DB ("the Utah Action"). In the Utah Action, CAO Group alleged that Defendant GE Lighting, Inc. infringed one or more claims of the '961 and '770 patents.

Following the filing of the complaint in the Utah Action, Defendant GE Lighting, Inc. (as the real party in interest) and another defendant, Osram Sylvania, Inc. filed several petitions for inter partes reexamination and ex parte reexamination directed to the '961 patent and '770 patent. The Utah Action was stayed pending reexamination in March 2013. An Ex Parte Reexamination Certificate on the '961 patent was issued on or about September 2, 2014, in which new claims 21-103 were determined to be patentable. An Ex Parte Reexamination Certificate on the '770 patent was issued on or about September 8, 2014, in which new claims 18-96 were determined to be patentable. The inter partes reexamination proceedings continued until May 2017.

2. During the pendency of the reexaminations, in July 2015, the '961 and '770 patents were assigned (along with rights to sue for patent infringement) to Epistar Corporation, who then assigned the '961 and '770 patents back (along with the right to sue for past infringement) to CAO Group in June 2016. In October 2016, CAO Group assigned the '961 and '770 patents (along with the right to sue for past infringement) to CAO Lighting, a wholly owned subsidiary of CAO Group.

3. On January 14, 2020, CAO Group filed a motion to reopen the case and lift the stay in the Utah Action. On April 23, 2020, the District of Utah dismissed the Utah Action for lack of subject matter jurisdiction. On May 12, 2020, the District of Utah clarified and amended its order and judgment that the dismissal of the Utah Action was without prejudice.

PARTIES

4. Plaintiff CAO Lighting, Inc. is a corporation with its principal place of business at 4628 West Skyhawk Drive, West Jordan, Utah 84084. CAO Lighting, Inc. is a wholly owned subsidiary of the CAO Group, Inc.

5. Upon information and belief, Defendant General Electric Company (hereinafter, "General Electric") is a publicly traded corporation organized and existing under the laws of the state of New York located at 41 Farnsworth Street, Boston, Massachusetts 02210. GE has designated Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801 as its agent for service of process.

6. Upon information and belief, Defendant Consumer Lighting (U.S.), LLC (d/b/a GE Lighting) (hereinafter, "GE Lighting") is a limited liability company organized and existing under the laws of the state of Delaware, located at 1975 Noble Road, Cleveland, Ohio 44112. Defendant Consumer Lighting (U.S.), LLC (d/b/a GE Lighting) has designated Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801 as its agent for service of process.

7. Upon information and belief, Defendant Current Lighting Solutions, LLC (hereinafter, "Current") is a limited liability company organized and existing under the laws of the state of Delaware with its principal place of business at 1975 Noble Road, Nela Park, Cleveland, OH 44112. Defendant Current Lighting Solutions, LLC has designated Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801 as its agent for service of process.

JURISDICTION AND VENUE

8. This is a civil action for patent infringement under the patent laws of the United States, Title 35 of the United States Code.

9. This Court has exclusive subject matter jurisdiction under 28 U.S.C. §§ 1338(a) and 1331.

10. This Court has personal jurisdiction over Defendants because they engaged in systematic and continuous business activities in this District. Further, as described below, Defendants have committed and continue to commit acts of patent infringement in this District.

11. Venue is proper in this District under 28 U.S.C. § 1400(b) because Defendants have committed acts of patent infringement in this District. In addition, Defendants GE Lighting and Current are incorporated in the state of Delaware. Venue also is proper in this District under 28 U.S.C. § 1400(b) because General Electric has regular and established businesses located in Delaware, including GE Aviation, a division of General Electric, which is a Delaware limited liability company with a facility in Newark, Delaware. Further, General Electric is registered to do business in Delaware and has committed substantial acts of infringement in this Delaware. Further, General Electric previously has not contested venue in this District under 28 U.S.C. § 1400(b) in this matter or in *CFL Technologies, Inc. v. General Electric Company and GE Lighting, Inc.*, Case No. 18-1444-RGA, United States District Court for the District of Delaware (filed September 17, 2018).

BACKGROUND

12. CAO Lighting is the owner by assignment of the ‘961 patent and ’770 patent. The ’961 and ‘770 patents are directed to a semiconductor light source, including LED chips, with effective heat sinks, to provide efficient and long-lasting illumination of physical spaces

occupied by humans. CAO Lighting and its founder and CEO, Dr. Densen Cao, Ph.D., are innovation leaders and have created many fundamental technologies in LED lighting.

13. CAO Lighting makes, markets, and sells LED lighting products under the brand names LuxemBright® and Dynasty®. CAO Lighting's products provide energy saving solid state lighting solutions to signage and commercial lighting applications. LuxemBright® LED Signage systems provide sign owners with the best in-class value LED lighting solutions. Its potted and rugged design, with the addition of through hole LED lamps, makes the LuxemBright® LEDs usable outdoors in any harsh weather environment. The system offers different configurations for complete solutions for all types of signage lighting. Dynasty® LED Lighting products provide commercial, retail and general lighting applications. The energy savings and long life advantages are through our extensive LED product family. Dynasty® LED is the only packaged LED light source to offer a 360 degree beam and removable base. CAO Lighting's Dynasty® Candelabra lamp, offers the same look and efficacy as traditional incandescent candelabras. However, this product only uses a little more than 3 watts of electricity. The Dynasty® lamp series can directly replace existing incandescent and compact fluorescence to have the same efficacy, but saves more than 60% of energy.

14. CAO Lighting was formerly a division of the CAO Group. Dr. Cao founded the CAO Group in 2000. This innovative company became a force in creating products that could be considered foundational in every dental practice. Based on his LED research, Dr. Cao introduced the first commercial LED curing light with a distribution partner. The use of LED curing lights saves $6,000 per dentist per year on average. After the introduction of curing lights, Dr. Cao took his knowledge of light-emitting technology and moved on to lasers. In 2002, he invented the first compact diode soft-tissue laser that was manufactured and sold by the CAO Group. Dr. Cao's

research and expertise in light-emitting technology then led him into LED lighting. His research in long-lasting and energy-efficient LED lighting has been foundational in replacement bulbs that, up to that point in time, were incandescent. For example, Dr. Cao invented methods to build LED light sources with 360º light beam and improved heat management. These methods are widely adopted in today's efficient LED lighting products. Dr. Cao also has pioneered LEDs as light sources for detecting forensic evidence in different fields. The CAO Group's branded product, UltraLite ALS®, is an industry standard and leading brand of forensic lights which has benefitted criminal investigations worldwide.

15. Dr. Cao, who has a Ph.D. in materials science and engineering from the University of Utah in Salt Lake City, is a named inventor on 160 patents and patent applications in the fields of LED curing lights, diode lasers, and LED lighting.

16. In 2013, the LED lighting division of the CAO Group was spun off into CAO Lighting, Inc, a wholly owned subsidiary of CAO Group. The '961 and '770 patents were assigned to CAO Lighting on October 26, 2016, and the assignment included all rights, title, and interest in the '961 and '770 patents, including the right to sue for past or current infringement and collect any royalties or damages for infringement.

OVERVIEW OF THE PATENTS-IN-SUIT

17. The '961 Patent, titled "Semiconductor Light Source using a Heat Sink with a Plurality of Panels," was issued by the United States Patent and Trademark Office on October 15, 2002. The invention of the '961 patent is especially useful for partially or fully illuminating a space occupied by or viewed by humans, such as residential spaces, commercial spaces, outdoor spaces, the interior or exterior of a vehicle, and the like. A true and correct copy of the '961 Patent is attached hereto as Exhibit A.

18. The ‘770 patent, titled “Light Source Using Semiconductor Devices Mounted on a Heat Sink,” was issued by the United States Patent and Trademark Office on October 21, 2003. The invention of the ‘770 patent also relates to the field of semiconductor light sources and illumination devices, especially LEDs, useful for providing visible light in order to partially or fully illuminate a space occupied by or viewed by humans, as residential spaces, commercial spaces, outdoor spaces, the interior or exterior of a vehicle, and the like. A true and correct copy of the ’770 Patent is attached hereto as Exhibit B.

19. CAO Lighting owns all rights, title and interest in the ’961 and ‘770 patents, including the right to recover all past and future damages for infringement of the ‘961 and ‘770 patents.

20. Prior to the inventions of the ’961 and ‘770 patents, LEDs were used primarily in low intensity applications, such as panel displays (e.g., laptop computer screens), signal lighting, and other instrumentation purposes. ‘961 patent, col. 1:13-16.

21. At the time of the invention of the ‘961 and ‘770 patents, and still today, LED light sources were desirable because they provided a high efficiency light source that used substantially less energy and created less heat than typical prior art light sources such as incandescent and halogen lights. ‘961 patent, col. 1:16-20. However, semiconductor light sources prior to Dr. Cao’s invention had not been successfully and economically used to illuminate physical spaces. ‘961 patent, col. 1:20-22. Furthermore, at the time of Dr. Cao’s invention, arranging a sufficient number of LED modules to generate the desired high light intensity took an excessive amount of physical space and created unmanageable amounts of heat. ’961 patent, col. 1:26-29. Consequently, prior to Dr. Cao’s invention, LED-based light sources were not suitable for replacing traditional tungsten light bulbs. ‘961 patent, col. 1:30-32. The traditional

incandescent and fluorescent light sources at the time of Dr. Cao's invention had high energy consumption, high heat generation, and short useful life compared to Dr. Cao's invention. '961 patent, col. 1:50-54.

22. The inventions of the '961 and '770 patents were directed to a semiconductor (e.g., LED) light source for use in illuminating spaces used by humans with a single color light in the visible range and which would efficiently dissipate the heat produced by the light source. '961 patent, col. 1:46-50.

23. For example, the '961 and '770 patents teach the use of multiple high-power LED chips emitting white light, combined with effective heat dissipation in fixtures suitable for use in common lighting receptacles.

24. The '961 Patent discloses a semiconductor light source including (1) an enclosure with an interior volume, (2) a base including an electrical connector, (3) a heat sink configured to withdraw heat from and suitable for mounting semiconductor devices, and (4) semiconductor chips capable of emitting light with a power output greater than 40 milliwatts. The enclosure can be of any desired shape, such as a bulb, square, cylindrical, or n-sided.

25. The '961 Patent was subject to two merged Inter Partes reexaminations (95/000,680 and 95/002,324) and an Ex Parte reexamination (90/012,957). Inter Partes reexamination No. 95/000,680 was filed on July 30, 2012 by GE Lighting, Inc. as the real party in interest. As a result of those reexaminations, the original claims 1-20 of the '961 Patent were cancelled and an Ex Parte Reexamination Certificate (10279th) was issued for the '961 Patent on September 2, 2014, in which new claims 21-103 were determined to be patentable. A copy of the Ex Parte Reexamination Certificate for the '961 is attached hereto as Exhibit C.

26. Claims 21-103 of the '961 Patent are valid and enforceable.

27. The ’770 patent discloses a semiconductor light source including (1) an enclosure with an interior volume, (2) a base on which the enclosure is mounted, (3) a plurality of primary heat sinks mounted on a secondary heat sink, (4) semiconductor chips (including LEDs) mounted on the primary heat sinks and capable of emitting monochromatic light with a power output greater than 40 milliwatts. The enclosure can be of any desired shape, such as a bulb, square, cylindrical, or n-sided.

28. The ’770 Patent was subject to two merged Inter Partes reexaminations (95/000,678 and 95/002,242) and an Ex Parte reexamination (90/012,959). Inter Partes reexamination No. 95/000,678 was filed on July 30, 2012 by “GE Lighting, Inc.” as the real party in interest. As a result of those reexaminations, the original claims 1-6, 8, 10-15, and 17 were disclaimed; original claims 7, 9, and 16 were cancelled; and an Ex Parte Reexamination Certificate (10202nd) was issued for the ’770 Patent on September 8, 2014, in which new claims 18-96 were determined to be patentable. A copy of the Ex Parte Reexamination Certificate for the ’770 patent is attached hereto as Exhibit D.

29. Claims 18-96 of the ’770 patent are valid and enforceable.

RELATIONSHIP BETWEEN THE DEFENDANTS

30. Upon information and belief, prior to April 1, 2019, one of General Electric’s operating segments was Energy Connections & Lighting.

31. Upon information and belief, General Electric’s Energy Connections & Lighting operating segment included two lighting divisions: GE Lighting and Current, powered by GE.

32. Upon information and belief, GE Lighting focused on consumer LED lighting products.

33. Upon information and belief, Current, powered by GE, focused on providing commercial and industrial LED lighting products.

34. Upon information and belief, since 2014, General Electric has purchased products including LED lamps from finished goods suppliers in China, imported those products into the United States, and sold those products in the United States.

35. Upon information and belief, GE Lighting and Current, powered by GE, worked closely with one another, including through another division or segment of General Electric, GE Lighting Solutions, LLC, with respect to developing and marketing LED lighting products. From 1998 to 2019, GE Lighting Solutions, LLC was managed by a committee of five members, all of whom were appointed by General Electric. In addition, each of the committee members selected by General Electric were General Electric employees, including employees working in both the GE Lighting and Current, powered by GE divisions.

36. Upon information and belief, Current is a former subsidiary of General Electric. As of April 1, 2019, Current became a separate business branded as "Current, powered by GE," and that under a long-term licensing agreement, Current continues to use the GE brand on its products and services, including LED lighting products. Upon information and belief, Current also does business as "GE Current."

37. Upon information and belief, Current purchases certain products, including LED lighting products, from suppliers in China, imports those products into the United States, and sells those products in the United States.

38. Upon information and belief, General Electric's GE Lighting division was formed as Defendant Consumer Lighting (U.S.), LLC on February 6, 2018, as a Delaware corporation No. 6745711, and continued to do business as GE Lighting.

39. Upon information and belief, up to July 1, 2020, GE Lighting operated under or as a subsidiary of General Electric.

40. Upon information and belief, on or about July 1, 2020, GE Lighting was acquired by Savant Systems, LLC, and was renamed "GE Lighting, a Savant company." GE Lighting, a Savant Company maintained the same Delaware corporation number as Defendant GE Lighting.

41. Upon information and belief, GE Lighting may be undergoing, or has already underwent, another name change to "Savant Technologies." GE Lighting's Delaware corporation number is now assigned to Savant Technologies.

42. Upon information and belief, GE Lighting presently sells or offers to sell consumer LED lighting products under the GE brand, including by offering LED lighting products under the GE brand at www.gelighting.com.

43. Upon and belief, Current presently sells or offers to sell commercial or industrial LED lighting products under the GE brand, including by offering LED lighting products under the GE brand at www.gecurrent.com.

44. Upon information and belief, GE Lighting and Current have used space and conducted business operations, and presently continue to use space and conduct business operations, on General Electric's campus located in Nela Park in East Cleveland, Ohio.

DEFENDANTS' INFRINGING LED LIGHTING PRODUCTS

45. Defendants make, use, sell, offer for sale, or import into the United States, and/or have made, sued, sold, offered for sale, or imported into the United States, LED lighting products that infringe one or more claims of the '961 and '770 patents.

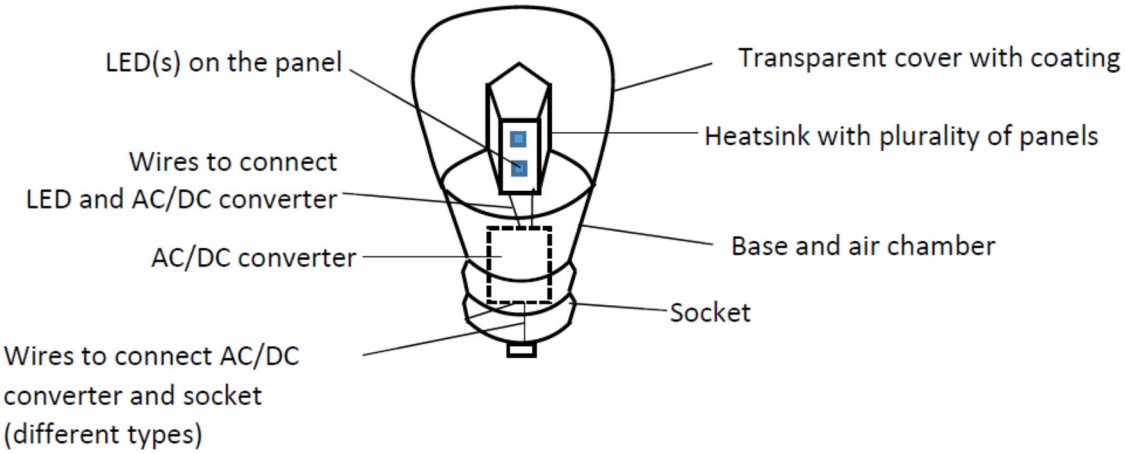
46. Upon information and belief, Current makes, sells, offers for sale, or imports into the United States various infringing LED lighting products, including indoor LED lighting

products offered at https://products.gecurrent.com/indoor-lighting. Upon information and belief, Current makes, sells, offers for sale, or imports into the United States various infringing LED lighting products, including indoor LED lighting products offered at https://products.gecurrent.com/outdoor-lighting.

47. Upon information and belief, General Electric's Current, powered by GE, division made, sold, offered for sale, or imported into the United States infringing LED lighting products. As an example, upon information and belief, General Electric's Current, powered by GE, division made, offered, sold, for sale, or imported into the United States at least the infringing LED lighting products described in a catalog published in 2018 and attached hereto as Exhibit E.

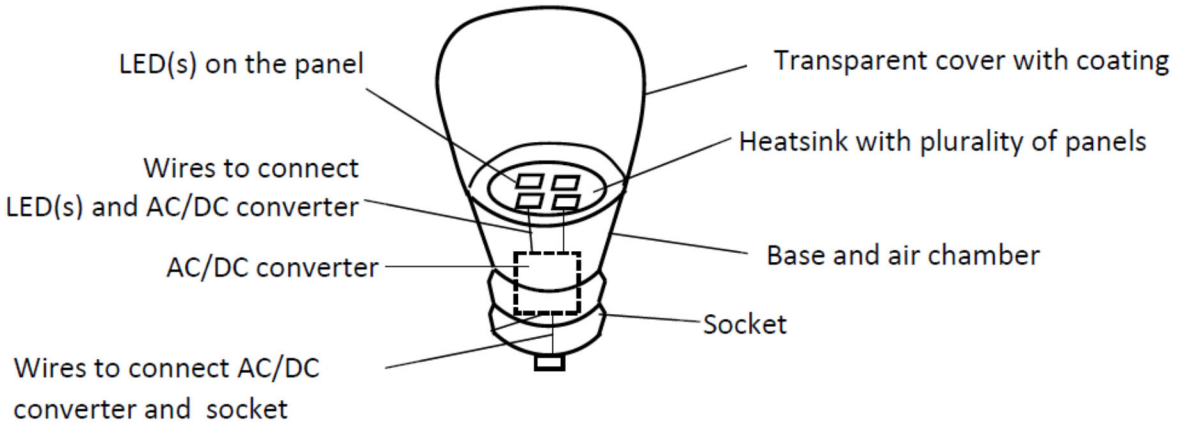
48. Upon information and belief, GE Lighting makes, sells, offers for sale, or imports into the United States various infringing LED lighting products, including those offered in a catalog published in 2016 attached hereto as Exhibit F and currently offered at https://www.gelighting.com/led-lights.

49. One category of LED lighting products that Defendants offer for sale, or have offered for sale, includes a heatsink with plurality of panels in multiple directions in a light transparent cover with or without coatings, single or multiple LEDs on the panel(s), each LED has the emitting elements with higher than 40mW power output and monochromatic light, phosphor coating to convert light from LED chip to white color, AC/DC converter inside base, a socket, and wire connections between components. Upon information and belief, the layout below is representative of this first category of LED products:



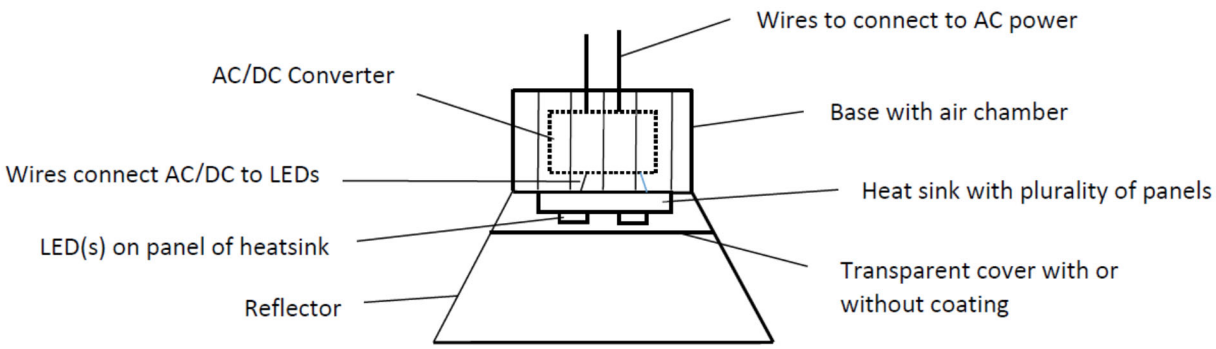
50. Upon information and belief, representative examples of products using the design of this first category are shown below:

51. Another category of LED lighting products that Defendants offer for sale, or have offered for sale, includes a heatsink with plurality of panels positions to emit light in desired direction in a light transparent cover with or without coatings, single or multiple LEDs on the panel(s), each LED has the emitting elements with higher than 40mW power output and monochromatic light, phosphor coating to convert light from LED to white color, a base, AC/DC converter inside base, a socket, and wire connections between components. Upon information and belief, the layout below is representative of this second category of LED products:



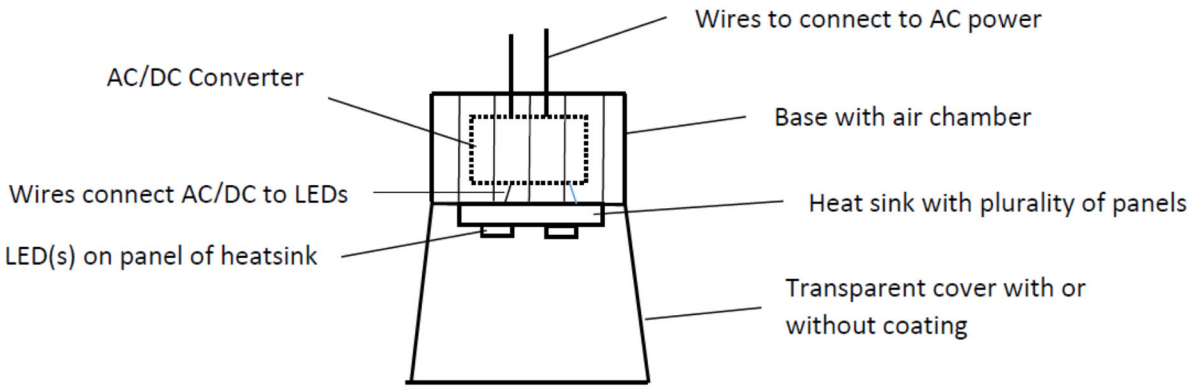
52. Upon information and belief, representative examples using the design of this second category are shown below.

53. Another category of LED lighting products that Defendants offer for sale, or have offered for sale, include a heatsink with plurality of panels positions to emit light in desired direction in a light transparent cover with or without coatings, single or multiple LEDs on the panel(s), each LED has the emitting elements with higher than 40mW power output and monochromatic light, phosphor coating to convert light from LED to white color, a base, AC/DC converter inside base, wire connections between components and wire inputs for AC power. Upon information and belief, the layout below is representative of this third category of LED products:



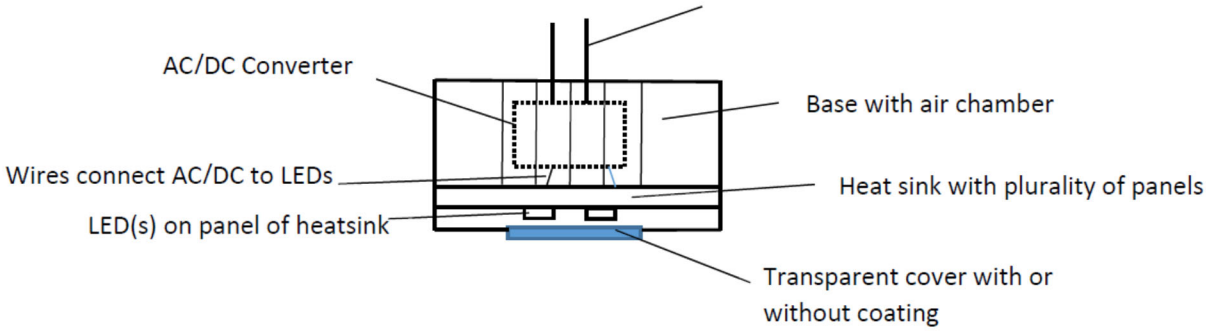
54. On information and believe, representative examples using the design of this third category of LED products are shown below.

55. Another category of LED lighting products that Defendants offer for sale, or have offered for sale, include a heatsink with plurality of panels positions to emit light in desired direction in a light transparent cover with or without coatings, single or multiple LEDs on the panel, each LED has the emitting elements with higher than 40mW power output and monochromatic light, phosphor coating to convert light from LED to white color, a base, AC/DC converter inside base, wire connections between components, and wire inputs for AC power. Upon information and belief, the layout below is representative of this fourth category:



56. Upon information and belief, representative examples using the design of this fourth category include:

57. Another category of LED lighting products that Defendants offer for sale, or have offered for sale, include a heatsink with plurality of panels positions to emit light in desired direction in a light transparent cover with or without coatings, single or multiple LEDs on the panel, each LED has the emitting elements with higher than 40mW power output and monochromatic light, phosphor coating to convert light from LED to white color, a base, AC/DC converter inside base, wire connections between components, and wire inputs for AC power. Upon information and belief, the layout below is representative of this fifth category of LED products:



58. On information and believe, representative examples using the design of this fifth category of LED products are shown below.

59. Upon information and belief, Defendants' LED lighting source products have incorporated or used LED chips supplied by Cree, Inc. among other suppliers.

60. Upon information and believe, GE incorporated LED chips into at least the GE Energy Smart® LED general purpose bulbs beginning as early as 2010 and display prototypes of these bulbs incorporating the Cree Xlamp® ZP-G LEDs in trade shows, including at the 2010 Light + Building 2010 in Frankfurt, Germany, and LightFair 2010 in Las Vegas, Nevada.

61. Upon information and belief, Defendants' LED lighting source products have incorporated or used LED chips having a sapphire substrate.

62. Upon information and belief, Defendants' LED lighting source products have incorporated or used LED chips having an electrically conductive substrate.

COMPLIANCE WITH 35 U.S.C. § 287(a)

63. CAO Lighting has complied with the provisions of 35 U.S.C. §287(a). As described below, Defendants had constructive notice of the patents-in-suit based on CAO Lighting's marking of all, or substantially all, of any applicable products covered by the '961 and '770 patents. As also described below, Defendants had actual notice of a charge of infringement relating to the '961 patent and '770 patents based on Defendants' sale of LED lighting source products.

64. CAO Lighting identified the patents-in-suit on the Dynasty line of products. The Dynasty line of LED lighting products have been consistently marked with applicable U.S. Patents owned by CAO, including the patents-in-suit, U.S. Patent Nos. 6,456,961 and 6,634,770. This marking has been on all, or substantially all, relevant Dynasty line of products covered by the patents-in-suit in compliance with 35 U.S.C. 287(a).

65. CAO Lighting also provided actual notice of infringement of the patents-in-suit by filing an action for infringement in May 2011 in the United States District Court for the District of Utah, Case No. 2:11-cv-426-DB ("the Utah Action"). CAO Group, Inc., CAO Lighting's parent company and former owner by assignment of the patents-in-suit, filed the Utah Action against GE Lighting, among others on May 10, 2011. See Utah Action, Case No. 2:11-cv-426-DB, at Dkt. 2. The Utah Action identified the patents-in-suit and accused LED light source products sold by GE Lighting as infringing on those patents.

66. On September 2, 2011, GE Lighting filed an answer to the complaint. Utah Action at Dkt. 48. Also on September 2, 2011, GE Lighting and General Electric filed counterclaims to the complaint. Utah Action at Dkt. 48. General Electric stated that it (General

Electric) was "the GE entity involved with the accused products identified in the Complaint." Dkt. 48 at p. 9.

67. On or about August 6, 2012, GE Lighting filed requests for *inter partes* reexamination directed to the patents-in-suit. The *inter partes* reexamination request for the '961 patent was assigned control number 95/000680. The *inter partes* reexamination request for the '770 patent was assigned control number 95/000678.

68. On October 29, 2012, the Utah district court entered a stay of the Utah Action for 120 days to allow the USPTO time to consider the requests for reexamination. On March 22, 2013, the Utah district court ordered that the Utah Action would be stayed pending reexamination, stating: "All deadlines set in this Court's September 4, 2012 Scheduling Order are vacated and all proceedings in this matter are stayed until the termination of the last to terminate of the following Reexamination proceedings initiated by the United States Patent and Trademark Office: 95/000,678; 95/000,679; 95/000,680; 95/002,242; 95/002,245; or 95/002,324. Any party may seek a full or partial lifting of this stay, at any time, for good cause shown." Utah Action at Dkt. 180. The March 22, 2013 Order was vacated and the Utah district court entered another order on March 25, 2013 staying the Utah Action, stating: "All deadlines set in this Court's September 4, 2012 Scheduling Order are vacated and all proceedings in this matter are stayed in light of the following Reexamination proceedings initiated by the United States Patent and Trademark Office: 95/000,678; 95/000,679; 95/000,680; 95/002,242; 95/002,245; or 95/002,324. The Plaintiff is directed to inform the Court of the issuance by the United States Patent Office of a notice of intent to issue a reexamination certificate in any of the identified reexaminations within ten (10) days of the receipt of such certificate. Plaintiff shall serve any such notice filed with the Court on all Defendants. The stay shall be lifted forty-five (45) days

after the Court's receipt of the notice filed by Plaintiff. Nothing in this order prevents a party from seeking a continuation of the stay." Utah Action at Dkt. 183.

69. On or about August 26, 2013, Osram Sylvania Inc., another defendant in the Utah Action, filed a petition for *ex parte* reexamination on certain claims of the patents-in-suit that were not subject to reexamination in the previously filed *inter partes* reexamination petitions. The *ex parte* reexamination petition for the '961 patent was assigned control no. 90/012,957. The *ex parte* reexamination for the '770 patent was assigned control no. 90/012959.

70. Defendants were aware of the *ex parte* reexamination filing or became aware of it shortly after its filing. For example, in the *inter partes* reexamination control no. 95/000680 filed by GE Lighting, notice was given at least by March 3, 2014 of the pending *ex parte* reexamination of the '961 patent, control no. 90/012,957. On March 28, 2014, GE Lighting filed third party requester comments in which GE Lighting acknowledged the filing of the ex parte reexamination petition in which original claims 8 and 9 had been cancelled.

71. Also on March 28, 2014, GE Lighting filed a petition with the USTPO to merge the *inter partes* reexamination control no. 95/000680 proceedings with the pending *ex parte* reexamination proceedings. In this petition, GE Lighting specifically cited Patent Owner's proposed amendment presenting new claims depending from original claim 8 and noted, "Since they depend from a claim involved in GE Lighting's pending *Inter Partes* reexamination, GE Lighting should be allowed to comment on the proposed new claims and merger of the referenced proceedings would allow GE Lighting to provide such comments. In this petition, GE Lighting specifically identified the claim elements of what is now asserted claim 21 of the '961 patent and argued:

> 12. GE Lighting believes that merger of the proceedings would benefit the Patent and Trademark Office as GE Lighting could provide comments that would be of assistance to the examination of the new claims that the Patentee has proposed.
>
> As one example, in an amendment filed in *Ex Parte* Reexamination No. 90/012,957 the Patent Owner proposes to add a new claim 21 (dependent from claim 8 involved in GE Lighting's *Inter-Partes* Reexamination No. 95/000,680) which would include a limitation requiring a LED chip "configured to output light at greater than about 40 milliwatts." *See* AMENDMENTS TO THE CLAIMS at 2 (filed March 24, 2014 in 90/012,957). In the same amendment, the Patent Owner argues that this limitation is not met by the prior art Begemann reference because: (a) the Begemann reference teaches the use of LED chips having an output of "5 [lumens] or more"; (b) according to the Patent Owner – "a light output of '40 milliwatts' is roughly equal to a light output of about 15 lumens" and (c) according to the Patent Owner – Begemann's 5 lumen output is therefore below the "light output of '40 milliwatts' required by new claim 21." *See Id.* at 33. This argument is unsupported and without merit.

72. GE Lighting further acknowledged in its March 28, 2014 petition that "new (and different) claims 21-107 in *Ex Parte* Reexamination No. 90/012,957 all depend from original claim 8, which depended from original claim 7, which depended from original claim 1." Claim 21 of the '961 patent, in particular, is the claim that was eventually deemed patentable and is now asserted against Defendants.

73. Defendants thus had notice of the pending *Ex Parte* Reexamination as well as the proposed new claims, including claim 21 that is now asserted against them in this litigation. Defendants further had notice of the claims that were deemed patentable in the *Ex Parte* Reexamination Certificate, including claim 21 that is now asserted in this litigation, and would have had such notice upon the issuance and publication of the *Ex Parte* Reexamination Certificate. The *Ex Parte* Reexamination Certificate for the '961 patent was issued on September 2, 2014 and was submitted and included as part of the still-pending *Inter Partes* Reexamination being pursued by GE Lighting. Further, on November 21, 2014, approximately six weeks after the *Ex Parte* Reexamination Certificate was issued, the USTPO entered a decision dismissing

GE Lighting's petition to merge the '680 Inter Partes Reexamination petition with the Ex Parte Reexamination petition:

> *Inter Partes* Reexamination Control Nos. 95/000,680 and 95/002,324 Page 2
>
> On September 2, 2014, the Office issued and published in the *Official Gazette* an *Ex Parte* Reexamination Certificate (10279th) for *ex parte* reexamination proceeding control number 90/012,957 ("the '957 reexamination proceeding"). Thus, the '957 reexamination proceeding is no longer pending before the Office. Accordingly, both petitions regarding merger with the no longer pending '957 reexamination proceeding are dismissed as moot.

74. The *Ex Parte* Reexamination Certificate for the '770 patent issued on September 8, 2014. At the time of issuance and publication of the '770 ex parte reexamination certificate, the '770 patent remained subject to pending *inter partes* reexamination control number 95/002,242 and *ex partes* reexamination control number 90/012,959 filed September 13, 2012 and August 27, 2013, respectively. For the same reasons set forth above in paragraph __ through __ , Defendants thus had notice of the pending *ex parte* reexamination of the '770 patent, as well as the proposed new claims, including claim 18 that is now asserted against them in this litigation, as well as notice of the claims issued and published in the *Ex Parte* Reexamination of the '770 patent on December 3, 2013.

75. Upon the issuance and publication of the *Ex Parte* Reexamination Certificates for the '961 and '770 patents on September 2, 2014 and September 8, 2014, respectively, the Utah Action remained pending.

76. 35 U.S.C. § 287(a) states: "(a) Patentees, and persons making, offering for sale, or selling within the United States any patented article for or under them, or importing any patented article into the United States, may give notice to the public that the same is patented, either by fixing thereon the word "patent" or the abbreviation "pat.", together with the number of the patent, or when, from the character of the article, this can not be done, by fixing to it, or to the package wherein one or more of them is contained, a label containing a like notice. In the event

of failure so to mark, no damages shall be recovered by the patentee in any action for infringement, except on proof that the infringer was notified of the infringement and continued to infringe thereafter, in which event damages may be recovered only for infringement occurring after such notice. Filing of an action for infringement shall constitute such notice."

77. The Utah Action is a filing of an action for infringement of the '961 patent.

78. The Utah Action is a filing of an action for infringement of the '770 patent.

79. The Utah Action constitutes adequate notice of infringement of the '961 and '770 patents under Section 287(a).

80. The requirement of actual notice of infringement under Section 287(a) is designed to assure the recipient knew of the adverse patent during the period in which liability accrues, when constructive notice is absent.

81. Actual notice may be achieved without creating a case of actual controversy.

82. Actual notice is met when the recipient is notified, with sufficient specificity, that the patent holder believes that the recipient of the notice may be an infringer.

83. The actual notice requirement of Section 287(a) is satisfied when the recipient is informed of the identity of the patent and the activity that is believed to be an infringement.

84. At no time following the issuance of the *Ex Parte* Reexamination Certificates for the '961 and '770 patents claim did CAO Lighting withdraw its claim that Defendants infringed the '961 patent or the '770 patent.

85. In view of the filing of the Utah Action asserting Defendants infringed the '961 and '770 patents by selling LED lighting source products, and in further view of the Defendants' involvement in the *inter partes* reexamination of the '961 and '770 patents and its knowledge of the precise claims proposed and subsequently deemed patentable in the Ex Parte Reexamination

Certificate for the '961 and '770 patents, and in further view of the still pending Utah Action upon the issuance of that Ex Parte Reexamination Certificate, Defendants had actual notice of the charge of infringement of the '961 and '770 patents and actual notice of the new claims, including now-asserted claim 21 of the '961 patent and claim 18 of the '770 patent, from the Ex Parte Reexamination Certificate.

86. Actual notice of infringement of the '961 and '770 patents, including the elements of at least the now-asserted claim 21 of the '961 patent and claim 18 of the '770 patent, is further established based on the fact that claim 21 of the '961 patent is dependent on original claim 8, which is dependent on original claim 7, which is dependent on original claim 1. Claim 21 recites: The semiconductor light source as recited in claim 8, wherein: said at least one semiconductor chip is a light emitting diode (LED) chip configured to output light at greater than 40 milliwatts, and said LED chip is configured to emit monochromatic visible light." Thus, as with original claims 1, 7, and 8, Claim 21 is directed to a semiconductor light source. Claim 1 recites that the semiconductor chips used in this light source may be "selected from the group consisting of light emitting diodes, light emitting diode arrays, laser chips, LED modules, laser modules, and VCSEL chips." Claim 21 selects from this group of semiconductor chips a laser emitting diode, or LED. In addition, Claim 21 recites that the LED chip "configured to emit monochromatic visible light," as in original claim 1, which specifically recites that the semiconductor chip (including LED chips) is capable of emitting monochromatic light and there is a coating for converting the monochromatic light emitted by the chip to white light, which is visible light. Finally, the disclosure of the '961 patent at column 4, lines 4-7, specifically calls out high-powered LED chips having light output greater than 40 milliwatts and the Utah Action would

have provided notice of this disclosure of high-powered LEDs having at least 40 milliwatts in light output.

87. Similarly, claim 18 of the '770 patent is dependent on original claim 9 which is dependent on original claim 1. Claim 18 recites: "The semiconductor light source as recited in claim 9 where: said semiconductor chip is a light emitting diode (LED) chip configured to output light at greater than about 40 milliwatts, said LED chip is surface mounted on said one of said primary heat sinks, and said LED chip is configured to emit monochromatic visible light." Claim 18 of the '770 patent is directed to semiconductor-based light source of original claim 1 of the '770, wherein that semiconductor is an LED chip, capable of emitting monochromatic light, and coated for converting that monochromatic light to visible white light. Column 4, lines 4-7, of the '770 patent disclosure specifically calls out high-powered LED chips having light output greater than 40 milliwatts and the Utah Action would have provided notice of this disclosure of high-powered LEDs having at least 40 milliwatts in light output.

88. Thus, the filing of the Utah Action, along with Defendants' involvement in the reexaminations and knowledge of the ex parte reexamination claims found patentable, provided actual notice to Defendants of a charge of infringement as to the '961 patent, including all the elements of now-asserted claim 21, based on Defendants' sale of LED lighting source products.

FIRST CAUSE OF ACTION
INFRINGEMENT OF THE '961 PATENT

89. Paragraphs 1 through 88 are incorporated by reference as if fully set forth herein.

90. Defendants have directly infringed, and continues to directly infringe, literally or by the doctrine of equivalents, at least Claim 21 of the '961 patent in this District and elsewhere in the United States.

91. Upon information and belief, Defendants have made, used, sold, or offered for sale, or imported into the United States, multiple lines of lighting products that fall within the scope of one or more of the claims of the ’961 Patent (including Claim 21), including, at least, the A19 Series, A21 Series, BR30 Series, BR40 Series, PAR20 Series, PAR30 Series, PAR38 Series, A15 Series, CAC Series, CAM Series, G16 Series, and G25 Series as shown below:

Category	Product # (SKU)	Picture
General Purpose	A19 Soft White, 60W Replacement, Dimmable 44917, 44920	
	A19 Daylight, 60W Replacement, Dimmable 44921, 44923	
	A19 Soft White 60W Replacement, Dimmable, HD Relax 44929, 44930	
	A19 Daylight 60W Replacement, Dimmable, HD Refresh 44931, 44937	
	A19 Daylight, 60W Replacement, Dimmable 44921, 44923	
	A19 Daylight, 40W Replacement, Dimmable 44792, 44794	

	A19 Soft White 40W Replacement, Dimmable, HD Relax 44858, 44898	
	A19 Daylight 40W Replacement, Dimmable, HD Refresh 44899, 44900	
	A19 60W Replacement, Reveal HD+ 44943, 44946, 44952,46654	
	A19 40W Replacement, Reveal HD+ 44904, 44906, 46650	
	A19 Soft White, 60W Replacement, Dimmable 62923, 67511, 67591, 67615, 79370, 79373, 90243, 99215	
	A19 Daylight, 60W Replacement, Dimmable 32938, 32944, 62924, 67515, 67605, 67616, 76484, 76488	
	A19 Soft White, 40W Replacement, Dimmable 32933, 32939, 62920, 67500, 67572, 67607, 79415, 99214	
	A19 Daylight, 40W Replacement, Dimmable 32934, 32940, 62921, 67502, 67590, 67614, 79444	

	A21 Soft White, 75W Replacement, Dimmable 32910, 32965, 65735, 65943, 92917	
	A21 Daylight, 75W Replacement, Dimmable 32912, 32968, 65743, 66117, 92919	
	A21 Soft White, 100W Replacement, Dimmable 32925, 32971, 33071, 65935, 65941, 92930, 98879	
	A21 Soft White 100W Replacement, Dimmable, HD Relax 91640, 96709, 98583	
	A21 Daylight 100W Replacement, Dimmable, HD Refresh 91641, 96712, 96756	
	A21 75W Replacement, Reveal HD+ 44955, 46656	
	A21 100W Replacement, Reveal HD+ 44958, 46657	
Recess	BR30 Soft White, 65W Replacement, Dimmable Indoor Floodlight 33641, 40893, 40918, 40925, 41308	

	BR30 Daylight, 65W Replacement, Dimmable Indoor Floodlight 40946, 41003, 41048, 41054, 41409, 41427	
	BR30 Soft White 65W Replacement, Relax HD+ Dimmable, Indoor Floodlight 33644, 40931, 41382, 41425	
	BR30 Soft White 65W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 30688, 30689, 30691, 30693, 33662, 45170	
	BR40 Soft White, 85W Replacement, Dimmable Indoor Floodlight 41055, 41311	
	BR40 Soft White 85W Replacement, Relax HD+ Dimmable, Indoor Floodlight 41085, 41432	
	BR40 Soft White 80W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 30695, 30696, 30749	
Outdoor/ Floodlight	PAR20 Soft White, 50W Replacement, Dimmable Indoor Floodlight 44972, 44987	
	PAR20 Soft White 50W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 45023	

	PAR20LN Soft White, 75W Replacement, Dimmable Indoor Floodlight 45032	
	PAR20 Warm White, 100W Replacement, Dimmable Indoor Floodlight 45890	
	PAR30 Soft White, 75W Replacement, Dimmable Indoor Floodlight 45042	
	PAR30 Soft White 75W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 45106	
	PAR30LN Soft White, 75W Replacement, Dimmable Indoor Floodlight 45025	
	PAR30LN Warm White, 150W Replacement, Dimmable Indoor Floodlight 45891	
	PAR38 Soft White, 90W Replacement, Dimmable Outdoor Floodlight 45160	
	PAR38 Soft White, 120W Replacement, Dimmable Outdoor Floodlight 45892	

	PAR38 Soft White, 150W Replacement, Dimmable Outdoor Floodlight 45893	
	PAR38 Soft White, 250W Replacement, Dimmable Outdoor Floodlight 45894	
Ceiling Fan	A15 Soft White, 40W Replacement, Dimmable, Ceiling Fan, Medium Base 25277	
	A15 Soft White 40W Replacement, Dimmable, HD Relax, Ceiling Fan, Medium Base 31374, 42227	
	A15 Daylight 40W Replacement, Dimmable, HD Refresh, Ceiling Fan, Medium Base 31375	
	A15 Soft White, 60W Replacement, Dimmable, Ceiling Fan, Medium Base 25986	
	A15 Soft White 60W Replacement, Dimmable, HD Relax, Ceiling Fan, Medium Base 31361, 42226	
	A15 Daylight 60W Replacement, Dimmable, HD Refresh, Ceiling Fan, Medium Base 31375	

Decorative	CAC Soft White 40W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Candelabra Base 31412, 42232	
	CAC Soft White 60W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Candelabra Base 41733	
	CAM Soft White 40W Replacement, HD Relax Dimmable, Clear Decorative, Bent Tip, Medium Base 31480, 42243	
	CAM Soft White 60W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Medium Base 36335, 37439	
	G16 Soft White, 40W Replacement, Dimmable, Decorative Globe, Candelabra Base 25046	
	G16 Soft White, 40W Replacement, Dimmable, Decorative Globe, Candelabra Base 25046	
	G25 Soft White, 40W Replacement, HD Relax, Dimmable, Decorative Globe, Medium Base 31541, 42257	

	G25 Soft White, 40W Replacement, HD Reveal, Dimmable, Decorative Globe, Medium Base 31887, 32181, 42404	
	G25 Soft White, 60W Replacement, HD Relax, Dimmable, Decorative Globe, Medium Base 31696, 42261	
	G25 Soft White, 60W Replacement, HD Reveal, Dimmable, Decorative Globe, Medium Base 42698	
Vintage	CAC Soft White 40W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Candelabra Base 35667, 36764, 42149	
	CAC Soft White 60W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Candelabra Base 33537, 36548	
	CAM Soft White 40W Replacement, Dimmable,  Vintage, Decorative Amber, Bent Tip, Medium Base 35669, 36772, 42152	

	CAM Soft White 60W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Medium Base 33541, 36553	

92. Each of the foregoing products are a semiconductor (LED) light source including (1) an enclosure with an interior volume, (2) a base including an electrical connector, (3) a heat sink with plurality of panels configured to withdraw heat from and suitable for mounting semiconductor devices, and (4) LED chips capable of emitting monochromatic light with a power output greater than 40 milliwatts.

93. Each of the foregoing products include multiple LED chips mounted on panels.

94. Each of the foregoing products include a coating to convert the monochromatic light to white light.

95. Each of the foregoing products include LED chips with a substrate on which epitaxial layers are grown.

96. Each of the foregoing products include LED chips with an active layer and a buffer layer on the substrate.

97. Each of the foregoing products include LED chips with first and second cladding layers, positioned on opposite sides of the active layer.

98. Each of the foregoing products include LED chips with a contact layer for powering the chip.

99. Each of the foregoing products include LED chips with reflective layers on opposite sides of the active layer.

100. Claim 21 of the '961 Patent is dependent upon claim 8, which depends from claim 7, which in turn depends from Claim 1. As noted, although claims 1, 7 and 8 were cancelled during reexamination of the '961 Patent, claim 21 was found patentable. Claim 21, as well as claims 1, 7 and 8 from which Claim 21 depends, is set forth below:

> **Claim 1.** A semiconductor light source for emitting light to illuminate a space used by humans, the semiconductor light source comprising:
>
> an enclosure, said enclosure being fabricated from a material substantially transparent to white light,
>
> an interior volume within said enclosure,
>
> a heat sink located in said interior volume,
>
> said heat sink being capable of drawing heat from one or more semiconductors devices,
>
> said heat sink having a plurality of panels on it suitable for mounting semiconductor devices thereon,
>
> said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source,
>
> at least one semiconductor chip capable of emitting light mounted on one of said panels,
>
> said semiconductor chip being capable of emitting monochromatic light,
>
> said semiconductor chip being selected from the group consisting of light emitting diodes, light emitting diode arrays, laser chips, LED modules, laser modules, and VCSEL chips, and
>
> a coating for converting monochromatic light emitted by said chip to white light.
>
> **Claim 7.** A device as recited in claim 1 wherein said chip includes
>
> a substrate on which epitaxial layers are grown,

a buffer layer located on said substrate, said buffer layer serving to mitigate differences in material properties between said substrate and other epitaxial layers,

a first cladding layer serving to confine electron movement within the chip, said first cladding layer being adjacent said buffer layer,

an active layer, said active layer emitting light when electrons jump to a valance state,

a second cladding layer, said second cladding layer positioned so that said active layer lies between cladding layers, and

a contact layer on which an electron may be mounted for powering said chip.

Claim 8. A device as recited in claim 7 further comprising a first and a second reflective layers, each of said first and second reflective layers being located on opposite sides of said active layer, said reflective layers serving to reflect light emitted by said active layer.

Claim 21. The semiconductor light source as recited in claim 8, wherein:

said at least one semiconductor chip is a light emitting diode (LED) chip configured to output light at greater than 40 milliwatts, and

said LED chip is configured to emit monochromatic visible light.

101. As an example of the nature of the infringing GE Lighting products, the A21 Series of products include each of the elements of Claim 21 of the ’961 patent. Below is an excerpt from Defendants’ website depicting the GE Soft White LED A21 (100W) bulb.

GE LED 100w

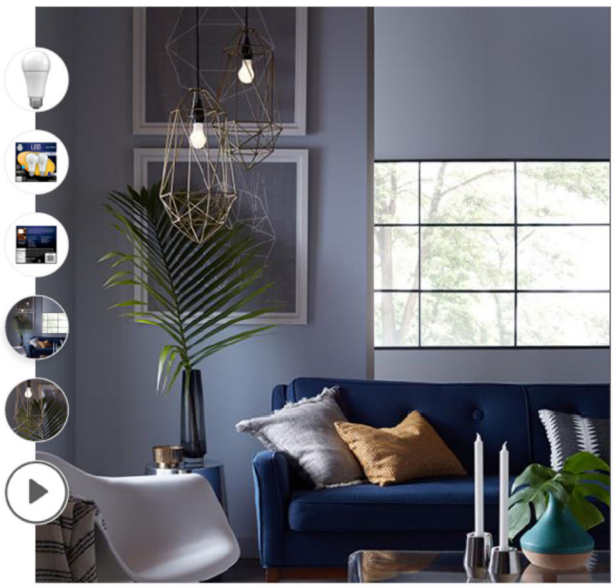
GE Soft White 100W Replacement LED Light Bulbs General Purpose A21

comfortable soft white light

GE Soft White LED A21 General Purpose light bulbs offer outstanding energy efficiency and long-lasting performance. It offers warm_light. Use GE LED general purpose light in table lamps, sconces and open fixtures to replace 100-watt incandescent bulbs. It's great for frequently Read more

- 100-Watt replacement using only 15 Watts
- Rated to last over 13 years based on 3 hours per day use
- Saves $140 in energy cost vs. a 100 Watt incandescent A21 bulb over the bulb's life
- warm_light that's dimmable
- Not for use in enclosed fixtures
- Same size and shape as an incandescent A21 bulb

102. The A21 Series is a light source for emitting light to illuminate spaces used by humans as depicted below in the excerpt from Defendants' website.



GE LED 100w

GE Soft White 100W Replacement LED Light Bulbs General Purpose A21

comfortable soft white light

GE Soft White LED A21 General Purpose light bulbs offer outstanding energy efficiency and long-lasting performance. It offers warm_light. Use GE LED general purpose light in table lamps, sconces and open fixtures to replace 100-watt incandescent bulbs. It's great for frequently Read more

- 100-Watt replacement using only 15 Watts
- Rated to last over 13 years based on 3 hours per day use
- Saves $140 in energy cost vs. a 100 Watt incandescent A21 bulb over the bulb's life
- warm_light that's dimmable
- Not for use in enclosed fixtures
- Same size and shape as an incandescent A21 bulb

103. The A21 Series includes an enclosure fabricated from a material substantially transparent to white light, which further includes an interior volume within the enclosure and at least one heat sink located in the interior volume of the enclosure.

104. The heat sink of the A21 Series is capable of drawing heat from the LED devices, in particular, by drawing heat into the interior volume of the light source enclosure.

105. The heat sink of the A21 Series has a plurality of panels disposed on it with the LED devices mounted on the panels. For example, each panel on the heat sink displays a plurality of LED devices arranged in a column on each panel.

106. The panels on the heat sink of the A21 Series are oriented in a manner to facilitate emission of light from LED devices in the desired directions around the semiconductor light source.

107. The A21 Series has multiple LED chips on each panel capable of emitting light.

108. Upon information and belief, the LED chips in the A21 Series are p-n junction type LEDs.

109. The A21 Series has LED chips that are capable of emitting monochromatic light. Upon information and belief, the LED chips of the A21 emits blue light.

110. The A21 Series contains a coating for converting monochromatic light emitted by said chip to white light. Upon information and belief, the coating includes a phosphor based coating to convert at least some of the blue light to yellow light, which, when combined with the blue light yields white light.

111. The LED chip used in the A21 Series further contains a substrate on which epitaxial layers are grown.

112. Upon information and belief, the LED chips used in the A21 Series include a patterned sapphire substrate.

113. The LED chips used in the A21 Series include a buffer layer located on the substrate.

114. Upon information and belief, the buffer layer includes an aluminum/gallium/nitride region.

115. The LED chips used in the A21 Series include an active layer.

116. Upon information and belief, the active layer in the A21 Series chips is an MQW active layer.

117. Upon information and belief, the active layer includes a gallium/indium/nitride region.

118. The LED chips used in the A21 Series include a first cladding layer which is positioned adjacent the buffer layer.

119. Upon information and belief, the first cladding layer of the LED chips of the A21 Series includes gallium/indium/nitride and gallium/nitride regions.

120. The LED chips used in the A21 Series include a second cladding layer positioned such that the active layer is between the two cladding layers.

121. Upon information and belief, the second cladding layer of the LED chips of the A19 Series includes gallium/nitride and aluminum/gallium/nitride regions.

122. The LED chips used in the A21 Series include a contact layer for powering the chip.

123. Upon information and belief, the contact layer includes doped gallium/nitride.

124. The LED chips used in the A21 Series have at a first and a second reflective layer, located on opposite sides of the active layer. These reflective layers serve at least in part to reflect light emitted by said active layer.

125. Upon information and belief, the patterned layer between the substrate and the buffer reflects light emitted by the active layer.

126. Upon information and belief, the chips used in the A21 Series include an ITO layer positioned adjacent the contact layer.

127. Upon information and belief, the ITO layer reflects light emitted the active layer.

128. The LED chips used in the A21 Series are configured to output light at greater than 40 milliwatts.

129. The LED chips used in the A21 Series are configured to emit monochromatic visible light.

130. Upon information and belief, the LED chips used in the A21 Series emit blue light.

131. Upon information and belief, Defendants' other LED lighting products identified herein, including, without limitation, the consumer LED lighting products presently sold through

GE's GE Lighting business unit and the professional (commercial) LED lighting products presently sold through Current are identical or substantially similar in hardware and architecture to the A21 Series or are identical or substantially similar in hardware and architecture one or more of the designs described in paragraphs 31 to 41 above, that causes them to infringe, literally or under the doctrine of equivalents, at least claim 21 of the '961 patent.

132. Defendants have engaged in the manufacture, use, sale, offer for sale and/or importation of the aforementioned products, in the United States, without the permission, license or consent of CAO Lighting.

133. As set forth in the factual allegations in Paragraphs 63 through 88 above, Defendants had actual notice that CAO believed GE Lighting was infringing the '961 patent since at least May 2011 and also had constructive notice of the '961 patent.

134. Defendants' acts of infringement have been and continue to be willful and deliberate. Defendants have been aware of the '961 patent since at least May 2011 since the filing of the original Utah Action alleging infringement of the '961 patent. Defendants also have been aware of the inter partes reexamination and ex parte reexamination proceedings initiated by Defendant GE Lighting, Inc. as real party in interest, as well as the issuance of the Ex Parte Reexamination Certificates on the '961 patent in 2014, which resulted in the currently asserted claims of the '961 patent. Upon information and belief, Defendants have deliberately infringed the '961 patent and in disregard for the '961 patent by making, having made, using, importing, and offering for sale products that infringe the '961 patent. Upon information and belief, in light of the infringement claims asserted in the original Utah Action, the filing and participation of Defendants in the reexaminations of the '961 patent, and the knowledge of the results of those reexaminations, the risks of infringement of the '961 patent, including those claims determined

to be patentable in the ex parte reexamination certificates on the '961 patent, were known to Defendants and/or were obvious under the circumstances that the infringement risks should have been known. Upon information and belief, Defendants have not attempted any design or sourcing changes to avoid the risks of infringement of the '961 patent. Defendants have acted despite an objectively high likelihood that their past and continuing actions constituted infringement of the '961 patent, and this objectively-defined risk was known or should have been known to Defendants. Defendants thus had actual knowledge of the '961 patent and knew that their conduct constituted infringement. CAO Lighting reasonably believes that such acts of willful infringement will continue in the future unless enjoined by this Court.

135. By reason of their aforementioned acts of infringement, Defendants have been unjustly enriched.

136. By reason of Defendants' acts of infringement, CAO Lighting has suffered damages, including but not limited to, lost profits, and CAO Lighting is entitled to recover such lost profits. At a minimum, by reason of the aforementioned acts of infringement, CAO Lighting is entitled to recover a reasonable royalty.

137. By reason of GE Lighting's acts of infringement, unless enjoined by this Court, CAO Lighting will continue to suffer irreparable harm for which there is no adequate remedy at law.

SECOND CAUSE OF ACTION
INFRINGEMENT OF THE '770 PATENT

138. Paragraphs 1 through 137 are incorporated by reference as if fully set forth herein.

139. Defendants have directly infringed, and continues to directly infringe, literally or by the doctrine of equivalents, at least Claim 18 of the '770 patent in this District and elsewhere in the United States.

140. Upon information and belief, Defendants have made, used, sold, or offered for sale, or imported into the United States, multiple lines of lighting products that fall within the scope of one or more of the claims of the '770 Patent (including Claim 18), including, at least, the A19 Series, A21 Series, BR30 Series, BR40 Series, PAR20 Series, PAR30 Series, PAR38 Series, A15 Series, CAC Series, CAM Series, G16 Series, and G25 Series as shown below:

Category	Product # (SKU)	Picture
General Purpose	A19 Soft White, 60W Replacement, Dimmable 44917, 44920	
	A19 Daylight, 60W Replacement, Dimmable 44921, 44923	
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	A19 Daylight 60W Replacement, Dimmable, HD Refresh 44931, 44937	
	A19 Daylight, 60W Replacement, Dimmable 44921, 44923	
	A19 Daylight, 40W Replacement, Dimmable 44792, 44794	

	A19 Soft White 40W Replacement, Dimmable, HD Relax 44858, 44898	
	A19 Daylight 40W Replacement, Dimmable, HD Refresh 44899, 44900	
	A19 60W Replacement, Reveal HD+ 44943, 44946, 44952,46654	
	A19 40W Replacement, Reveal HD+ 44904, 44906, 46650	
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	A19 Daylight, 60W Replacement, Dimmable 32938, 32944, 62924, 67515, 67605, 67616, 76484, 76488	
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	A19 Daylight, 40W Replacement, Dimmable 32934, 32940, 62921, 67502, 67590, 67614, 79444	

	A21 Soft White, 75W Replacement, Dimmable 32910, 32965, 65735, 65943, 92917	
	A21 Daylight, 75W Replacement, Dimmable 32912, 32968, 65743, 66117, 92919	
	A21 Soft White, 100W Replacement, Dimmable 32925, 32971, 33071, 65935, 65941, 92930, 98879	
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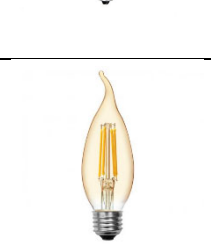
	A21 Daylight 100W Replacement, Dimmable, HD Refresh 91641, 96712, 96756	
	A21 75W Replacement, Reveal HD+ 44955, 46656	
	A21 100W Replacement, Reveal HD+ 44958, 46657	
Recess	BR30 Soft White, 65W Replacement, Dimmable Indoor Floodlight 33641, 40893, 40918, 40925, 41308	

	BR30 Daylight, 65W Replacement, Dimmable Indoor Floodlight 40946, 41003, 41048, 41054, 41409, 41427	
	BR30 Soft White 65W Replacement, Relax HD+ Dimmable, Indoor Floodlight 33644, 40931, 41382, 41425	
	BR30 Soft White 65W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 30688, 30689, 30691, 30693, 33662, 45170	
	BR40 Soft White, 85W Replacement, Dimmable Indoor Floodlight 41055, 41311	
	BR40 Soft White 85W Replacement, Relax HD+ Dimmable, Indoor Floodlight 41085, 41432	
	BR40 Soft White 80W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 30695, 30696, 30749	
Outdoor/ Floodlight	PAR20 Soft White, 50W Replacement, Dimmable Indoor Floodlight 44972, 44987	
	PAR20 Soft White 50W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 45023	

	PAR20LN Soft White, 75W Replacement, Dimmable Indoor Floodlight 45032	
	PAR20 Warm White, 100W Replacement, Dimmable Indoor Floodlight 45890	
	PAR30 Soft White, 75W Replacement, Dimmable Indoor Floodlight 45042	
	PAR30 Soft White 75W Replacement, Reveal HD+ Dimmable, Indoor Floodlight 45106	
	PAR30LN Soft White, 75W Replacement, Dimmable Indoor Floodlight 45025	
	PAR30LN Warm White, 150W Replacement, Dimmable Indoor Floodlight 45891	
	PAR38 Soft White, 90W Replacement, Dimmable Outdoor Floodlight 45160	
	PAR38 Soft White, 120W Replacement, Dimmable Outdoor Floodlight 45892	

	PAR38 Soft White, 150W Replacement, Dimmable Outdoor Floodlight 45893	
	PAR38 Soft White, 250W Replacement, Dimmable Outdoor Floodlight 45894	
Ceiling Fan	A15 Soft White, 40W Replacement, Dimmable, Ceiling Fan, Medium Base 25277	
	A15 Soft White 40W Replacement, Dimmable, HD Relax, Ceiling Fan, Medium Base 31374, 42227	
	A15 Daylight 40W Replacement, Dimmable, HD Refresh, Ceiling Fan, Medium Base 31375	
	A15 Soft White, 60W Replacement, Dimmable, Ceiling Fan, Medium Base 25986	
	A15 Soft White 60W Replacement, Dimmable, HD Relax, Ceiling Fan, Medium Base 31361, 42226	
	A15 Daylight 60W Replacement, Dimmable, HD Refresh, Ceiling Fan, Medium Base 31375	

Decorative	CAC Soft White 40W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Candelabra Base 31412, 42232	
	CAC Soft White 60W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Candelabra Base 41733	
	CAM Soft White 40W Replacement, HD Relax Dimmable, Clear Decorative, Bent Tip, Medium Base 31480, 42243	
	CAM Soft White 60W Replacement, HD Relax Dimmable, Decorative, Bent Tip, Medium Base 36335, 37439	
	G16 Soft White, 40W Replacement, Dimmable, Decorative Globe, Candelabra Base 25046	
	G16 Soft White, 40W Replacement, Dimmable, Decorative Globe, Candelabra Base 25046	
	G25 Soft White, 40W Replacement, HD Relax, Dimmable, Decorative Globe, Medium Base 31541, 42257	

	G25 Soft White, 40W Replacement, HD Reveal, Dimmable, Decorative Globe, Medium Base 31887, 32181, 42404	
	G25 Soft White, 60W Replacement, HD Relax, Dimmable, Decorative Globe, Medium Base 31696, 42261	
	G25 Soft White, 60W Replacement, HD Reveal, Dimmable, Decorative Globe, Medium Base 42698	
Vintage	CAC Soft White 40W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Candelabra Base 35667, 36764, 42149	
	CAC Soft White 60W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Candelabra Base 33537, 36548	
	CAM Soft White 40W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Medium Base 35669, 36772, 42152	
	CAM Soft White 60W Replacement, Dimmable, Vintage, Decorative Amber, Bent Tip, Medium Base 33541, 36553	

141. Each of the foregoing products are a semiconductor (LED) light source including (1) an enclosure with an interior volume, (2) a base including an electrical connector, (3) secondary heat sink with plurality of panels configured to withdraw heat from and suitable for mounting semiconductor devices, (4) a plurality of primary heat sinks mounted on the secondary heat sink, each of the primary heat sinks being smaller than the secondary heat sink, and (4) LED chips mounted on the primary heat sinks where the LED chips are capable of emitting monochromatic light with a power output greater than 40 milliwatts.

142. Each of the foregoing products include a coating to convert the monochromatic light to white light.

143. Each of the foregoing products include LED chips with a substrate on which epitaxial layers are grown.

144. Each of the foregoing products include LED chips with an active layer and a buffer layer on the substrate.

145. Each of the foregoing products include LED chips with first and second cladding layers, positioned on opposite sides of the active layer.

146. Each of the foregoing products include LED chips with a contact layer for powering the chip.

147. Upon information and belief, Defendants' products that infringe at least claim 18 of the '770 patent are identical or substantially similar in hardware and architecture one or more of the designs described in paragraphs 31 to 41 above, including, without limitation, the consumer LED lighting products presently sold through GE's GE Lighting business unit and the professional (commercial) LED lighting products presently sold through Current.

148. Upon information and belief, Defendants have incorporated LED chips into one or more of the foregoing products where the substrate is electrically conductive.

149. Defendants have engaged in the manufacture, use, sale, offer for sale and/or importation of the aforementioned products, in the United States, without the permission, license or consent of CAO Lighting.

150. As set forth in the factual allegations in Paragraphs 63 through 88 above, Defendants had actual notice of infringement that CAO believed GE Lighting was infringing the '770 patent since at least May 2011 and further had constructive notice of the '770 patent.

151. Defendants' acts of infringement have been and continue to be willful and deliberate. Defendants have been aware of the '770 patent since 2011 since the filing of the original Utah Action alleging infringement of the '770 patents. Defendants also have been aware of the inter partes reexamination and ex parte reexamination proceedings initiated by Defendant GE Lighting, Inc. as real party in interest, as well as the issuance of the Ex Parte Reexamination Certificates on the '770 patent in 2014, which resulted in the issuance of the presently asserted claims of the '770 patent. Upon information and belief, Defendants have deliberately infringed the '770 patent and in disregard for the '770 patent by making, having made, using, importing, and offering for sale products that infringe the '770 patent. Upon information and belief, in light of the infringement claims asserted in the original Utah Action, the filing and participation of Defendants in the reexaminations of the '770 patent, and the knowledge of the results of those reexaminations, the risks of infringement of the '770 patent, including those claims determined to be patentable in the ex parte reexamination certificates on the '770 patent, were known to Defendants and/or were obvious under the circumstances that the infringement risks should have been known. Upon information and belief, Defendants have not attempted any design or

sourcing changes to avoid the risks of infringement of the '770 patent. Defendants have acted despite an objectively high likelihood that their past and continuing actions constituted infringement of the '770 patent, and this objectively-defined risk was known or should have been known to Defendants. Defendants thus had actual knowledge of the '770 patent and knew that their conduct constituted infringement. CAO Lighting reasonably believes that such acts of willful infringement will continue in the future unless enjoined by this Court.

152. By reason of their aforementioned acts of infringement, Defendants have been unjustly enriched.

153. By reason of Defendants' acts of infringement, CAO Lighting has suffered damages, including but not limited to, lost profits, and CAO Lighting is entitled to recover such lost profits. At a minimum, by reason of the aforementioned acts of infringement, CAO Lighting is entitled to recover a reasonable royalty.

154. By reason of Defendants' acts of infringement, unless enjoined by this Court, CAO Lighting will continue to suffer irreparable harm for which there is no adequate remedy at law.

DEMAND FOR JURY TRIAL

155. CAO Lighting demands a trial by jury on all matters herein so triable.

PRAYER FOR RELIEF

WHEREFORE, CAO Lighting respectfully requests the Court enter judgment in its favor and against Defendants as follows:

a) Declaring Defendants have directly infringed and currently are directly infringing the '961 patent;

b) Declaring Defendants have directly infringed and currently are directly infringing directly infringes the ’770 patent;

c) Declaring that Defendants’ infringement has been willful;

d) Declaring that Defendants be preliminarily and permanently enjoined from making, using, selling, offering to sell, or importing into the United States, the products found to infringe the ’961 and/or the ’770 patents;

e) Awarding CAO Lighting damages sufficient to compensate for Defendants’ infringement, including lost profits, but in an amount no less than a reasonable royalty, and that such damages be trebled pursuant to 35 U.S.C. § 284;

f) Awarding all costs and expenses of this action, including reasonable attorney fees to CAO Lighting;

g) Awarding pre-judgment and post-judgment interest to CAO Lighting; and

h) Awarding to CAO Lighting all other further relief as the Court may deem, just, necessary and proper.

Dated: December 28, 2020

/s/ Chad S.C. Stover

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