

**IN THE UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA  
DURHAM DIVISION  
Case No.: 1:19-cv-394**

CURRENT LIGHTING SOLUTIONS, )  
LLC; GENERAL ELECTRIC CO.; and )  
CONSUMER LIGHTING (U.S.), LLC, )  
 )  
Plaintiffs, )  
 )  
v. )  
 )  
CREE, INC., )  
 )  
Defendant. )

**COMPLAINT**

**Jury Trial Demanded**

Plaintiffs Current Lighting Solutions, LLC, General Electric Company, and Consumer Lighting (U.S.), LLC (collectively, “Plaintiffs”) bring this Complaint for patent infringement against Defendant Cree, Inc. (“Defendant”). Plaintiffs allege as follows:

**NATURE OF THE ACTION**

1. Plaintiffs bring this action under the patent laws of the United States, 35 U.S.C. § 271 *et seq.*, to address infringement by Defendant of patents related to light emitting diode (“LED”) products. Plaintiffs seek damages for Defendant’s infringement and a permanent injunction restraining Defendant from further infringement.

**THE PARTIES**

2. Plaintiff Current Lighting Solutions, LLC (“Current”), is a Delaware Limited Liability Company located at 1975 Noble Road, Nela Park, East Cleveland, Ohio 44112. Current is a former subsidiary of General Electric. On April 1, 2019, Current

became a separate business and changed its name from GE Lighting Solutions, LLC to Current Lighting Solutions, LLC.

3. Plaintiff General Electric Company (“General Electric”) is a New York corporation located at 41 Farnsworth Street, Boston, Massachusetts 02210.

4. Plaintiff Consumer Lighting (U.S.), LLC, d/b/a GE Lighting (“Consumer Lighting”), is a Delaware Limited Liability Company located at 1975 Noble Road, Nela Park, East Cleveland, Ohio 44112. Consumer Lighting is a subsidiary of General Electric.

5. On information and belief, Defendant Cree, Inc. is a publicly traded corporation organized under the laws of North Carolina, with its principal place of business at 4600 Silicon Drive, Durham, North Carolina.

### **JURISDICTION AND VENUE**

6. This action for patent infringement arises under the patent laws of the United States, Title 35 of the United States Code.

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

8. This Court has personal jurisdiction over Defendant because Defendant maintains substantial, continuous, and systematic contacts in North Carolina, where Defendant is incorporated and has its principal place of business.

9. Venue is proper in this judicial district under 28 U.S.C. § 1400(b) because Defendant is incorporated in North Carolina and has its principal place of business in the Middle District of North Carolina.

## **FACTUAL BACKGROUND**

### **I. GENERAL ELECTRIC AND CURRENT'S PIONEERING WORK ON ILLUMINATION**

10. General Electric is a global digital industrial company that leads new paradigms in additive manufacturing, materials science, and data analytics.

11. Along with its former subsidiary Current, General Electric has worked at the forefront of innovation in the lighting and illumination field for over 125 years. Building on the first carbon filament light bulb invented by Thomas Edison in 1879 (as shown in the image below), General Electric pioneered the machine-blown light bulb (1892), the ductile tungsten filament used in modern incandescent bulbs (1909), the fluorescent lamp (1938), the halogen lamp (1959), and the first LED to emit visible light (1962).



12. General Electric bulbs have illuminated numerous historic settings and events including the first commercial lighting on a steamship (1890), the first large-scale application of electronic lighting controls, installed for the Chicago Civic Opera (1929), the first night game in major league baseball (1935), and the first lighting of Niagara Falls (1979). Indeed, the shape of the incandescent light bulb—which still resembles

Thomas Edison's original design—has become a cultural symbol for innovation and bright ideas.

13. Prior to its sale of Current, General Electric operated its commercial and industrial lighting business through Current. Current is a leading provider of energy efficiency and digital productivity solutions for commercial facilities and offices, retail stores, and industrial sites. Its commercial technology portfolio includes LED (light emitting diode) and traditional lighting solutions, plus a wide variety of connected sensors, controls and software.

14. General Electric's consumer lighting business is conducted by its Consumer Lighting subsidiary. Consumer Lighting focuses on residential and consumer applications, such as residential light bulbs, and seeks to drive innovation and growth in LED and connected home technology in the consumer market.

15. General Electric itself licenses lighting technology, including LED technology, for use in display applications such as those used in smartphones, laptop computers, and televisions.

## **II. THE TECHNOLOGY AND PATENTS-IN-SUIT**

16. In recent years, Current and General Electric have had particular success with their patented TriGain™ LED technology. This technology, which is protected by U.S. Patent No. 7,497,973 and U.S. Patent No. 9,680,067 (among others), addresses the longstanding problem of how to deliver improved LED color rendering at the higher efficiencies required by commercial customers. Color rendering—*i.e.*, how a light source

makes the color of an object appear to human eyes—is important to many commercial and industrial customers, because more accurate color rendering can make food look fresher or clothes more attractive (thus driving increased sales) or enable precise mixing and selection of paint colors in a factory or enhance visual inspection of a finished product. Prior to TriGain™, high levels of color rendering generally came at the cost of lower efficiency (*i.e.*, lower light output per energy input), meaning that fixtures did not provide enough light for commercial purposes and/or were too expensive for commercial applications. TriGain™ LED technology also provides advantages for LED-backlit display applications, including greater overall color, enhanced red enunciation, more unique red generation, and better general contrast for LED-backlit displays.

17. First introduced to the commercial market in 2015, TriGain™ represents the culmination of over ten years of research. Since their release, sales of TriGain™ fixtures have grown at a rapid pace, representing an exponentially increasing portion of Plaintiffs’ revenue for the relevant market segment. Sales of LEDs using TriGain™ technology for display purposes under license from General Electric have shown equally impressive growth.

18. U.S. Patent No. 7,497,973 (the “’973 Patent”), entitled “Red Line Emitting Phosphor Materials For Use In LED Applications,” duly and legally issued on March 3, 2009, from a patent application filed on February 28, 2006. The ’973 Patent names Emil Vergilov Radkov, Ljudmil Slavchev Grigorov, Anant Achyut Setlur, and Alok Mani Srivastava as inventors.

19. A true and correct copy of the '973 Patent is attached as Exhibit 1.
20. The '973 Patent is directed to particular phosphor compositions and lighting apparatuses that utilize those phosphor compositions.
21. Current and General Electric jointly own by assignment the entire right, title, and interest in the '973 Patent. Current and General Electric each own an undivided one half right, title and interest in this patent.
22. The '973 Patent is also subject to a license agreement defining certain rights as between Current, General Electric, and Consumer Lighting. Current, General Electric, and Consumer Lighting each hold exclusive rights to the '973 Patent within a certain field or fields of use, and together they hold all substantial rights across all fields of use, including the right to sue and recover for all past, current, and future infringement.
23. U.S. Patent No. 9,680,067 (the "'067 Patent"), entitled "Heavily Phosphor Loaded LED Packages Having Higher Stability," duly and legally issued on June 13, 2017, from an application filed on March 18, 2014. The '067 Patent names Ashfaquul Islam Chowdhury, Gary Robert Allen, and Dengke Cai as inventors.
24. A true and correct copy of the '067 Patent is attached as Exhibit 2.
25. The '067 Patent is directed to phosphor-loaded LED packages.
26. Current is the sole owner by assignment of all right, title, and interest in the '067 Patent.
27. General Electric holds an exclusive license to the '067 Patent within a certain field of use. Current and General Electric together hold all substantial rights

across all fields of use, including the right to sue and recover for all past, current, and future infringement.

### **III. DEFENDANT AND ITS INFRINGING PRODUCTS**

28. Defendant designs, develops, and manufactures LED lighting components and LED lamps, and sells such LED lighting components and LED lamps to distributors, retailers and other manufacturers of lighting products throughout the United States and abroad.

29. On information and belief, Defendant's products include LED packages containing Mn<sup>4+</sup>-activated potassium fluorosilicate phosphor material ("PFS phosphor"), including, but not limited to, Defendant's XLamp<sup>®</sup> eTone LED packages ("Defendant's eTone PFS LED Packages").

30. Defendant's eTone PFS LED Packages include at least the following model numbers: CMT1922-0000-00PN0U0A40G, CMT1922-0000-00PN0U0A30G, CMA1516-0000-00PN0U0A40G, and CMA1516-0000-00PN0U0A30G.

31. On information and belief, CMA1516-0000-00PN0U0A30G is representative of Defendant's eTone PFS LED Packages.

32. On information and belief, CMA1516-0000-00PN0U0A30G infringes, literally and/or by equivalents, at least claims 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 of the '973 Patent.

33. On information and belief, CMA1516-0000-00PN0U0A30G is or includes a lighting apparatus.



34. On information and belief, CMA1516-0000-00PN0U0A30G includes a semiconductor light source.

35. On information and belief, CMA1516-0000-00PN0U0A30G includes a phosphor material radiationally coupled to a light source, the phosphor material comprising a complex fluoride phosphor-activated with  $Mn^{4+}$ .

36. On information and belief, CMA1516-0000-00PN0U0A30G includes a phosphor material comprising  $K_2SiF_6:Mn^{4+}$ .

37. On information and belief, CMA1516-0000-00PN0U0A30G includes a semiconductor light emitting diode (LED) emitting radiation having a peak wavelength in the range of from about 370 to about 500 nm.

38. On information and belief, CMA1516-0000-00PN0U0A30G includes a nitride compound semiconductor.

39. On information and belief, CMA1516-0000-00PN0U0A30G includes a nitride compound semiconductor represented by the formula  $In_iGa_jAl_kN$ , where  $0 \leq i$ ;  $0 \leq j$ ,  $0 \leq k$ , and  $i+j+k=1$ .

40. On information and belief, CMA1516-0000-00PN0U0A30G includes a phosphor material which is coated on the surface of a light source.

41. On information and belief, CMA1516-0000-00PN0U0A30G includes an encapsulant surrounding a light source and a phosphor material.

42. On information and belief, CMA1516-0000-00PN0U0A30G includes a phosphor material which is dispersed in an encapsulant.

43. On information and belief, CMA1516-0000-00PN0U0A30G includes a reflector cup.

44. On information and belief, CMA1516-0000-00PN0U0A30G includes one or more phosphors in addition to the phosphor identified in Paragraph 35 above.

45. On information and belief, the one or more additional phosphors in CMA1516-0000-00PN0U0A30G has an emission maximum in the range of 500 to 610 nm.

46. On information and belief, the one or more additional phosphors in CMA1516-0000-00PN0U0A30G is a garnet activated with  $Ce^{3+}$ .

47. On information and belief, the one or more additional phosphors in CMA1516-0000-00PN0U0A30G is  $Ce^{3+}$ -doped  $Y_3(Al,Ga)_5O_{12}$ .

48. On information and belief, CMA1516-0000-00PN0U0A30G produces white light.

49. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having a CCT of less than 4500K.

50. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having a general CRI ( $R_a$ ) greater than 80.

51. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having a general CRI greater than 90.

52. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having an LER greater than  $330 \text{ Im/W}_{opt}$ .

53. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having a color point lying on or substantially on the Planckian locus.

54. On information and belief, CMA1516-0000-00PN0U0A30G produces white light having a color point within 0.01 from the Planckian locus in the vertical direction on the 1931 CIE chromaticity diagram.

55. On information and belief, CMA1516-0000-00PN0U0A30G includes a phosphor blend comprising the phosphor identified in Paragraph 35 above and at least one additional phosphor.

56. On information and belief, CMA1516-0000-00PN0U0A30G infringes, literally and/or by equivalents, at least claims 1, 3, 4, 7, 11, and 12 of the '067 Patent.

57. On information and belief, CMA1516-0000-00PN0U0A30G is or includes a phosphor-loaded LED package.

58. On information and belief, CMA1516-0000-00PN0U0A30G includes a first layer comprising a gravitationally settled blend of phosphor and silicone overlaying an LED.

59. On information and belief, the phosphor-silicone blend in CMA1516-0000-00PN0U0A30G comprises a phosphor to silicone weight ratio of at least 20%.

60. On information and belief, the phosphor-silicone blend in CMA1516-0000-00PN0U0A30G comprises at least  $K_2SiF_6:Mn^{4+}$  (PFS) phosphor.

61. On information and belief, CMA1516-0000-00PN0U0A30G includes an overlayer comprising silicone, which overlays the first layer.

62. On information and belief, the silicone overlayer in CMA1516-0000-00PN0U0A30G has a thickness of about 0.1 mm or greater.

63. On information and belief, the silicone overlayer in CMA1516-0000-00PN0U0A30G is made of the same silicone as in the phosphor silicone blend.

64. On information and belief, the phosphor silicone blend in CMA1516-0000-00PN0U0A30G includes BSY phosphor.

65. On information and belief, CMA1516-0000-00PN0U0A30G includes an LED which consumes low to mid power.

66. On information and belief, the phosphor silicone blend in CMA1516-0000-00PN0U0A30G comprises at least yttrium aluminum garnet (YAG).

67. On information and belief, CMA1516-0000-00PN0U0A30G includes a first layer comprising a blend of phosphor and silicone overlaying an LED.

**COUNT I**  
**(Infringement of U.S. Patent No. 7,497,973)**

68. The information and allegations set forth in all previous paragraphs are incorporated as though fully set forth herein.

69. On information and belief, Defendant has infringed the '973 Patent under 35 U.S.C. § 271(a) by using, selling, and/or offering for sale within the United States, and/or importing into the United States, Defendant's eTone PFS LED Packages, including CMA1516-0000-00PN0U0A30G.

70. On information and belief, Defendant is knowingly and intentionally inducing infringement of the '973 Patent in violation of 35 U.S.C. § 271(b) by actively

encouraging others to directly infringe by offering to sell, selling, and/or using in the United States, and/or importing into the United States, Defendant's eTone PFS LED Packages, including CMA1516-0000-00PN0U0A30G.

71. On information and belief, with knowledge and intent, or with willful blindness, Defendant is encouraging and facilitating infringement by others. For example, Defendant is selling or otherwise providing Defendant's eTone PFS LED Packages to distributors knowing that these distributors intend to import, offer to sell, and/or sell Defendant's eTone PFS LED Packages in the United States, for use by others. Defendant advertises its distributors under the "Where to Buy" section of Defendant's website for purchases being made in the United States. Exhibit 3, an excerpt from "Where to Buy" section, *available at* <https://www.cree.com/led-components/where-to-buy> (last visited Apr. 11, 2019).

72. On information and belief, Defendant has had knowledge of, or has been willfully blind toward, the '973 Patent since at least May 1, 2015, and Defendant has known that Defendant's eTone PFS LED Packages would infringe the patent from at least the time it began making, using, selling, offering to sell, and/or importing them.

73. For example, Defendant incorporated by reference the '973 Patent into the written description of its U.S. Patent No. 9,530,944, filed on May 1, 2015. Further, Defendant cited the '973 Patent to the U.S. Patent and Trademark Office in multiple information disclosure statements, including one filed on June 16, 2016 for U.S. Patent Application No. 15/184,104, a second filed on October 26, 2015 for U.S. Patent

Application No. 14/298,327, and a third filed on December 6, 2017 for U.S. Patent Application No. 15/832,848.

74. Furthermore, the existence of the '973 Patent is readily apparent from Plaintiffs' publicly available materials. For example, a 2015 General Electric brochure entitled "TriGain™ Phosphor: Simple, High-Performance Red for LED Backlighting" is publicly available online, and indicates that the '973 Patent, as well as others, "are relevant to the use of a PFS phosphor in an LED package and are available for license from GE." The brochure is attached hereto as Exhibit 4.

75. As a direct and proximate result of Defendant's acts of infringing the '973 Patent, Plaintiffs have suffered injury and monetary damages for which Plaintiffs are entitled to relief in the form of damages for lost profits and in no event less than a reasonable royalty to compensate for Defendant's infringement.

76. Plaintiffs have complied with 35 U.S.C. § 287 at least as of the filing of this Complaint.

77. Defendant will continue to directly infringe one or more claims of the '973 Patent, causing immediate and irreparable harm to Plaintiffs unless this Court enjoins and restrains Defendant's activities. There are inadequate remedies available at law to compensate for this harm.

78. On information and belief, Defendant's past and ongoing infringement of the '973 Patent has been and continues to be with knowledge of the '973 Patent and Defendant's infringement thereof, or has been and continues to be so obvious that it

should have been known to Defendant. Defendant's intentional, knowing, willful, and deliberate infringement of the '973 Patent, in conscious disregard of Plaintiff's rights, makes this case exceptional within the meaning of 35 U.S.C. § 285 and justifies treble damages pursuant to 35 U.S.C. § 284.

**COUNT II**  
**(Infringement of U.S. Patent No. 9,680,067)**

79. The information and allegations set forth in all previous paragraphs are incorporated as though fully set forth herein.

80. On information and belief, Defendant has infringed the '067 Patent under 35 U.S.C. § 271(a) by using, selling, and/or offering for sale within the United States, and/or importing into the United States, Defendant's eTone PFS LED Packages.

81. On information and belief, Defendant is knowingly and intentionally inducing infringement of the '067 Patent in violation of 35 U.S.C. § 271(b) by actively encouraging others to directly infringe by offering to sell, selling, and/or using in the United States, and/or importing into the United States, Defendant's eTone PFS LED Packages.

82. On information and belief, with knowledge and intent, or with willful blindness, Defendant is encouraging and facilitating infringement by others. For example, Defendant is selling Defendant's eTone PFS LED Packages to distributors knowing that these distributors intend to import, offer to sell, and/or sell Defendant's eTone PFS LED Packages in the United States, for use by others. Defendant advertises its distributors under the "Where to Buy" section of Defendant's website for purchases

being made in the United States. Exhibit 3, an excerpt from “Where to Buy” section, *available at* <https://www.cree.com/led-components/where-to-buy> (last visited Apr. 11, 2019).

83. On information and belief, Defendant has had knowledge of the ’067 Patent since at least the filing of this Complaint, and has known that Defendant’s eTone PFS LED Packages infringe the patent since at least that time.

84. As a direct and proximate result of Defendant’s acts of infringing the ’067 Patent, Plaintiffs have suffered injury and monetary damages for which Plaintiffs are entitled to relief in the form of damages for lost profits and in no event less than a reasonable royalty to compensate for Defendant’s infringement.

85. Defendant will continue to directly infringe one or more claims of the ’067 Patent, causing immediate and irreparable harm to Plaintiffs unless this Court enjoins and restrains Defendant’s activities. There are inadequate remedies available at law to compensate for this harm.

86. Plaintiffs have complied with 35 U.S.C. § 287 at least as of the filing of this Complaint.

### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs respectfully request that this Court enter judgment in its favor on each and every claim for relief set forth above and award it relief, including but not limited to the following:

A. Declaring that the ’973 Patent and the ’067 Patent were duly and legally



issued, and are valid and enforceable;

B. Declaring that Defendant has infringed the '973 Patent and the '067 Patent, and has infringed the '973 Patent willfully;

C. Awarding Plaintiffs damages in an amount to be determined at trial, including, but not limited to, all lost profits resulting from Defendant's acts of infringement, and in no event less than reasonable royalties, together with pre-judgment and post-judgment interest and supplemental damages for any continuing post-verdict infringement up until entry of the final judgment, with an accounting, as needed, pursuant to 35 U.S.C. § 284;

D. Awarding Plaintiffs treble damages for infringement of the '973 Patent as a consequence of Defendant's willful infringement under 35 U.S.C. § 284;

E. Granting Plaintiffs a permanent injunction against Defendant requiring that Defendant cease its continuing acts of infringement of the '973 and '067 Patents;

F. An order directing that, within thirty (30) days of entry of the injunction and order, Defendant file with this Court and serve on Plaintiffs' attorneys a report in writing and under oath setting forth the manner and form in which Defendant has complied with the injunction and order;

G. Ordering that, in the event a permanent injunction preventing future acts of infringement is not granted, Plaintiffs be awarded a compulsory ongoing license fee;

H. Awarding Plaintiffs all costs, disbursements, and attorney's fees it incurs in the prosecution of this action; and

I. Other relief as the Court may deem appropriate.

**DEMAND FOR JURY TRIAL**

Plaintiffs demand a trial by jury on all counts set forth herein.

This the 11<sup>th</sup> day of April, 2019.

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