

1 David C. Radulescu, Ph.D. (to be admitted *pro hac vice*)
2 Email: david@radip.com
3 RADULESCU LLP
4 The Empire State Building
5 350 Fifth Avenue, Suite 6910
6 New York, NY 10118
7 Telephone: 646-502-5950
8 Facsimile: 646-502-5959

6 Perry R. Clark (Cal. Bar No. 197101)
7 Email: perry@perryclark.com
8 Law Offices of Perry R. Clark
9 825 San Antonio Road
10 Palo Alto, CA 94303
11 Tel.: 650-248-5817

10 *Attorneys for Plaintiff*
11 *THE REGENTS OF THE UNIVERSITY OF CALIFORNIA*

12 **UNITED STATES DISTRICT COURT**
13 **CENTRAL DISTRICT OF CALIFORNIA**

14 THE REGENTS OF THE UNIVERSITY OF
15 CALIFORNIA,

16 Plaintiff,

17 v.

18 ZLIGHT TECHNOLOGY LLC,

19 Defendant.

Case No. 2:16-CV-8284

**COMPLAINT FOR PATENT
INFRINGEMENT**

JURY TRIAL DEMANDED

20
21 **COMPLAINT FOR PATENT INFRINGEMENT**

22 The Regents of the University of California (“The Regents”) files this Complaint for
23 patent infringement against Defendant Zlight Technology LLC (“Zlight”) and alleges as follows:

24 **I. PARTIES**

25 1. The University of California, Santa Barbara (“UCSB”) is an internationally
26 recognized pioneering research institution and one of the ten campuses that make up the
27 University of California System. At all times herein mentioned, Plaintiff The Regents was
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1 charged by state law with the duty of administering the University of California as a public trust,
2 pursuant to Article IX ¶ 9 of the California Constitution.

3 2. Upon information and belief, Defendant Zlight is a limited liability corporation
4 organized and existing under the laws of the State of Louisiana, with its principal place of
5 business at 1013 Harimaw Court East, Metairie, LA 70001.

6 **II. JURISDICTION AND VENUE**

7 3. This is an action for patent infringement arising under the patent laws of the
8 United States, 35 U.S.C. §§ 1, *et seq.* Thus, this Court has exclusive subject matter jurisdiction
9 under 28 U.S.C. §§ 1331 and 1338(a).

10 4. This Court has personal jurisdiction over Zlight because it has purposefully
11 availed itself of the privileges and benefits of the laws of the State of California.

12 5. Personal jurisdiction exists over Zlight because it has sufficient minimum contacts
13 with the forum as a result of placing the accused products into the stream of commerce with a
14 reasonable expectation that those products will be purchased in this district. For example, Zlight
15 offers to sell and sells accused products nationwide through its interactive websites,
16 <http://www.zlighttech.com/> and <http://www.led2020.com/>, as well as through intermediary
17 retailers such as <http://www.amazon.com/> and <http://www.walmart.com/>, and ships accused
18 products to customers, including those in this district. Upon information and belief, Zlight offers
19 for sale, sells, imports, advertises, makes available and/or markets products and services within
20 the State of California that infringe the patent-in-suit.

21 6. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391(b)–(c) and 1400(b).

22 **III. FACTUAL BACKGROUND**

23 7. The Regents constitute the governing board of the University of California system,
24 which includes UCSB. There are 26 voting members of the Regents, which have full powers of
25 organization and governance over the University of California system.

26 8. The responsibility of individual Regents is to serve as trustees for the people of the
27 State of California and as stewards of the University of California, acting to govern the
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1 University as a public trust in fulfillment of its educational, research, and public service missions
2 in the best interests of the people of California.

3 9. Among The Regents' responsibilities is the oversight of expenditures and
4 appropriation of funds. As such, The Regents are responsible for approving the use of the
5 University of California's substantial research resources.

6 10. UCSB proudly counts among its faculty six Nobel Laureates, one Fields Medal
7 recipient, 29 members of the National Academy of Sciences, 27 members of the National
8 Academy of Engineering, and 31 members of the Academy of Arts and Sciences. UCSB
9 receives over \$180 Million per year to support its research efforts from both public and private
10 sources.

11 11. UCSB is also the home of a world-renowned Materials Department that is
12 dedicated to solving tomorrow's problems in electronic and photonic materials, inorganic
13 materials, macromolecular and biomolecular materials, as well as structural materials. UCSB's
14 Materials Department has consistently ranked in the top two in the nation in various studies
15 including by the *National Research Council* and *U.S. News & World Report*. In addition,
16 according to Thomson Reuters, Materials research at UCSB ranks second in the world in terms of
17 citation impact—a method for comparing the quality of research. The citing of a scholar's
18 research (as represented by a published scientific paper) in another researcher's published work is
19 viewed as a strong indication of the importance of the original work and the influence it might
20 have.

21 12. UCSB's Materials Department has nine separate affiliated research centers,
22 including the California NanoSystems Institute, the Center for Multifunctional Materials and
23 Structures, the Center for Stem Cell Biology and Engineering, the Dow Materials Institute, the
24 Institute for Collaborative Biotechnologies, the Institute for Energy Efficiency, the Materials
25 Research Laboratory, the Mitsubishi Chemical Center for Advanced Materials, and, last but not
26 least, the Solid State Lighting and Energy Electronics Center.

27 13. UCSB's Solid State Lighting and Energy Electronics Center ("SSLEEC") is the
28 culmination of approximately 15 years of visionary research into solid state lighting and power

1 switching. Anticipating the future need for energy-efficient lighting technologies of the future,
2 The Regents, along with industry partners, have funded groundbreaking research at the SSLEEC
3 and its predecessor entities that have led to more energy-efficient solutions for lighting, cell
4 phones, computers, appliances, automobiles, industrial equipment, and power distribution
5 systems.

6 14. In or about 2001-2002, Professors Steven DenBaars, James Speck, Shuji
7 Nakamura, and other UCSB colleagues anticipated a future need for more efficient lighting and
8 power switching solutions and founded the Solid State Lighting & Display Center, a predecessor
9 to the current SSLEEC.

10 15. The SSLEEC consists of approximately a dozen faculty members, 30 graduate
11 students, and 20 staff including internationally recognized researchers and visiting scholars.
12 Over the past 15 years, the staff of the SSLEEC and its predecessors have published thousands of
13 peer-reviewed publications and have amassed a portfolio of over 300 issued patents. Since its
14 inception, the SSLEEC has conferred approximately 100 Ph.D. degrees. The SSLEEC's
15 principal investigators and faculty count among themselves a Nobel Prize, a Millennium
16 Technology Prize, and a Technology & Engineering Emmy award. Among the SSLEEC's staff
17 are 5 members of the National Academy of Engineers and 3 members of the National Academy
18 of Inventors.

19 16. SSLEEC research has resulted in major technological breakthroughs in the field of
20 solid state lighting. SSLEEC research has also led to numerous successful startup companies.
21 Startups nurtured by the SSLEEC have thus far resulted in the creation of hundreds of jobs.

22 17. For example, in 2007, researchers at the SSLEEC's predecessor fabricated a
23 gallium nitride-based LED with the highest efficiency and output power ever reported at the time.
24 They achieved this feat by developing an LED based on non-polar gallium nitride, that has a
25 crystal structure arranged in the *m*-plane, rather than the conventional *c*-plane gallium nitride
26 LEDs known at the time. These non-polar GaN LEDs were more efficient and able to handle
27 higher currents than anything available at the time.

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1 18. As another example, in 2012, researchers at the SSLEEC's predecessor achieved
2 the world's first violet nonpolar vertical-cavity surface-emitting laser (VCSEL), which was based
3 on *m*-plane Gallium Nitride semiconductors. These VCSELs were able to operate at room
4 temperature and provide high optical gain, which increases optical efficiency. This breakthrough
5 also could result in greatly reduced manufacturing costs, to be used in a variety of applications
6 including lighting, displays, sensors, and any technology that requires energy efficiency and a
7 small form-factor.

8 19. Additionally, in 2013, SSLEEC researchers including Professor DenBaars
9 developed guidelines to make it possible to optimize phosphors—a key component in white LED
10 lighting—allowing for brighter, more efficient lights. This recent breakthrough put high-
11 efficiency, high-brightness, solid-state lighting on a fast track.

12 20. Another example of the results of SSLEEC's groundbreaking research relates to
13 the LED Filament-style light bulbs, which uses transparent LED structures that extract light more
14 efficiently to directly replace Edison-style incandescent light bulbs. The invention of a
15 transparent LED that emits light from multiple surfaces without the use of a mirror by Professors
16 Steven DenBaars, Shuji Nakamura, and James Speck allows an LED lightbulb to operate more
17 efficiently by minimizing the re-absorption of light that would otherwise be reflected back at the
18 LED using a mirror. This particular technology is the subject of the present suit, as discussed
19 below.

20 **IV. THE ASSERTED PATENT**

21 21. United States Patent No. 7,781,789 (“the ’789 patent”) is entitled “Transparent
22 Mirrorless Light Emitting Diode” and was duly and legally issued by the U.S. Patent and
23 Trademark Office on August 24, 2010. A true and correct copy of the ’789 patent is attached as
24 Exhibit A.

25 22. The inventors of the ’789 patent are Steven P. DenBaars, Shuji Nakamura, and
26 James S. Speck.

27 23. Professor Steven DenBaars is a tenured professor at UCSB and is a co-Director of
28 the SSLEEC. Professor DenBaars is The Mitsubishi Chemical Professor in Solid State Lighting

1 & Display at UCSB. Prior to UCSB, he was an engineer at Hewlett-Packard Optoelectronics
2 where he contributed to the growth and fabrication of visible LEDs, focusing specifically on high
3 brightness red LEDs. He joined UCSB in 1991 and helped pioneer the field of solid-state
4 lighting, including the first U.S. university demonstration of a Blue Gallium Nitride laser diode.
5 Professor DenBaars is the recipient of the National Scientist Foundation Young Investigator
6 Award (1994), the Institute of Electrical and Electronics Engineering Fellow Award (2005) and
7 the IEEE Aron Kressel Award (2010). Professor DenBaars is a fellow of the National Academy
8 of Engineering (NAE) and the National Academy of Inventors (NAI). He has over 800
9 publications and over 63 patents.

10 24. Professor Shuji Nakamura is a tenured professor at UCSB and a co-Director of the
11 SSLEEC. In 2014, Professor Nakamura was honored as the co-recipient of the Nobel Prize in
12 Physics. He began researching high-efficiency blue LEDs (which are necessary to create white
13 light with LEDs) in the late 1980's, and his former employer began selling white LEDs enabled
14 by his invention in the mid 1990s. In addition to the 2014 Nobel Prize in Physics, Professor
15 Nakamura has received numerous other awards for his work in the field of LED lighting,
16 including the Nishina Memorial Award (1996), the Materials Research Society Medal Award
17 (1997), the Institute of Electrical and Electronics Engineers Jack A. Morton Award, the British
18 Rank Prize (1998), the Benjamin Franklin Medal Award (2002), the Millennium Technology
19 Prize (2006), the Czocharlski Award (2007), the Prince of Asturias Award for Technical
20 Scientific Research (2008), The Harvey Award (2009), and the Technology & Engineering
21 Emmy Award (2012) awarded by The National Academy of Television Arts & Sciences
22 (NATAS). He was elected as a fellow of the U.S. National Academy of Engineering in 2003. He
23 received the 2014 Order of Culture Award in Japan, and was inducted into the National Inventors
24 Hall of Fame in 2015. That same year, Professor Nakamura received the Charles Stark Draper
25 Prize for Engineering and the Global Energy Prize in Russia. In July 2016, he was elected to
26 Academia Sinica, Taiwan's preeminent research institution. Professor Nakamura has been a
27 professor at UCSB since 2000, and holds more than 200 U.S. patents in addition to over 300
28 Japanese patents. He has published over 550 papers in his field.

1 25. Professor James Speck co-founded the SSLEEC with Professors Shuji Nakamura
2 and Steven DenBaars. Professor Speck has been a member of the UCSB faculty since 1990. He
3 holds the Seoul Semiconductor Chair in Solid State Lighting at UCSB. Professor Speck is a
4 member of the Materials Research Society, the American Physical Society, and the Microscopy
5 Society of America. Professor Speck received the Quantum Device Award from the International
6 Symposium on Compound Semiconductors in 2007, was named an inaugural Materials Research
7 Society Fellow in 2008, and received the Japanese Journal of Applied Physics Best Paper Award
8 in 2008. In 2009, he became an American Physical Society Fellow. In 2010 he received the
9 IEEE Photonics Society Aron Kressel Award for his work on nonpolar and semipolar Gallium
10 Nitride-based materials and devices. Professor Speck has authored over 600 publications.

11 26. The '789 patent covers some of the important and award-winning innovations of
12 Professors DenBaars, Nakamura, and Speck, including those that use transparent LED structures
13 to enable LED Filament-style light bulbs.

14 27. The Regents own all rights, title, and interest in the '789 patent.

15 **V. COUNT 1 – PATENT INFRINGEMENT**

16 28. The Regents incorporate by reference the above paragraphs 1–27.

17 29. Zlight has directly infringed and is directly infringing at least claims 1 and 2 of
18 the '789 patent by making, using, offering for sale, selling, and/or importing products covered by
19 the claims of the '789 patent, including LED filament light bulbs.

20 30. Upon information and belief, Zlight directly infringes at least claims 1 and 2 of
21 the '789 patent by making, using, selling, offering to sell, and/or importing at least the following
22 products: the ZL-G25-FIL-4W-27K, ZL-B11-FIL-4W-27K/50K-E12-Clear-Dim, ZL-ST21-FIL-
23 4W-24K-Gold-Dim, ZL-ST21-FIL-4W-50K-Clear-Dim, ZL-A15-FIL-4W-27K/50K-E17-White,
24 ZL-A15-FIL-4W-27K/50K-E26-Clear, ZL-A15-FIL-4W-27K/50K-E26-White, ZL-A19-FIL-
25 7W-27K/50K-Clear-Dim, ZL-A19-FIL-7W-27K/50K-White-Dim, ZL-BR30-FIL-7W-
26 Red/Green/Blue-White-Dim, ZL-ST14-FIL-2W-27K/50K-White, ZL-ST14-FIL-2W-27K/50K-
27 Clear, ZL-G25-FIL-4W-27K/50K-White-Dim, ZL-BR20-FIL-4W-27K/50K-White-DIM, ZL-
28 BR30-FIL-7W-27K/50K-White-Dim, ZL-BR40-FIL-8W-27K/50K-White-DIM, ZL-G14-FIL-

1 2W-27K/50K-E12-Clear, ZL-CA-FIL-4W-27K/50K-E12-White-DIM, ZL-G14-FIL-2W-
2 27K/50K-E26-Clear, ZL-G14-FIL-2W-27K/50K-E26-White, ZL-G25-FIL-4W-27K/50K-Clear-
3 Dim, ZL-A19-FIL-4W-Green-Clear-Dim, ZL-A19-FIL-4W-Red-Clear-Dim, ZL-B11-FIL-4W-
4 27K/50K-E26-Clear-Dim, ZL-CA-FIL-4W-27K/50K-E12-Clear-Dim, ZL-A21-FIL-8W-
5 27K/50K-White-Dim, ZL-B11-FIL-4W-27K/50K-E12-White-Dim, ZL-CA-FIL-4W-27K/50K-
6 E26-Clear-Dim, ZL-A19-FIL-4W-Blue-Clear-Dim, ZL-A19-FIL-4W-27K-Clear-Dim, ZL-A15-
7 FIL-4W-50K-E17- Clear, ZL-A21-FIL-8W-27K/50K-Clear-Dim, ZL-A15-FIL-4W-27K-E12-
8 Clear, ZL-A15-FIL-2W-27K-E26-Clear, ZL-A15-FIL-2W-27K-E12-Clear, ZL-T10-FIL-4W-
9 27K/50K-Clear-Dim, ZL-A19-FIL-6W-27K-Clear, and ZL-G14-FIL-2W-27K/50K-E12-White
10 (the “Infringing LED Filament Products”).

11 31. Claim 1 of the '789 patent is directed to an opto-electronic device comprising a
12 light emitting diode that emits light from multiple sides, wherein all layers of the diode are
13 transparent for an emission wavelength except for an emitting layer. Claim 2 of the '789 patent
14 depends from claim 1 and specifies that the light is emitted from the front and back sides of the
15 diode.

16 32. Claim 1 of the '789 patent requires “[a]n opto-electronic device.” Zlight’s ZL-
17 G25-FIL-4W-27K bulb is an “opto-electronic device,” specifically, an LED filament bulb, as
18 shown below:

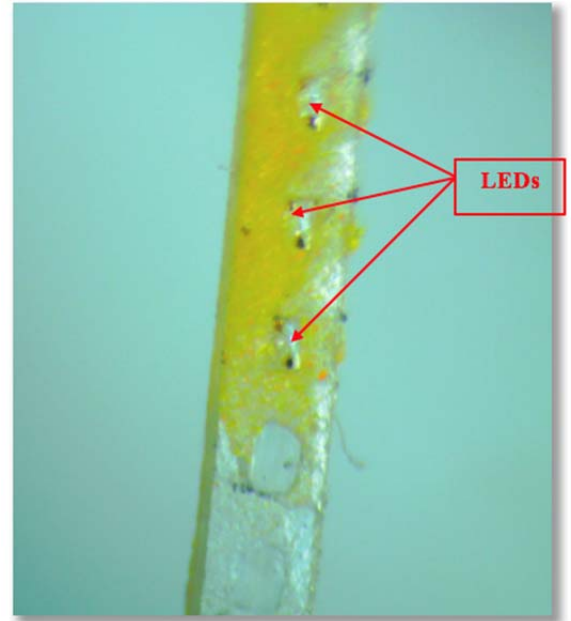


27 <http://www.zlighttech.com/zl-g25-fil-4w-27k-clear-dim.html> (Last visited: August 24, 2016).
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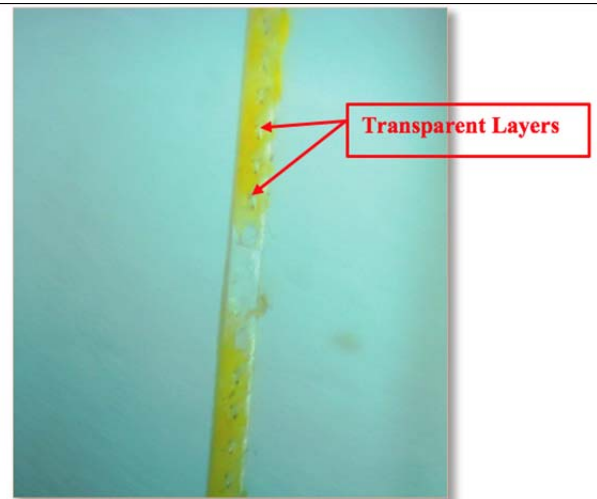
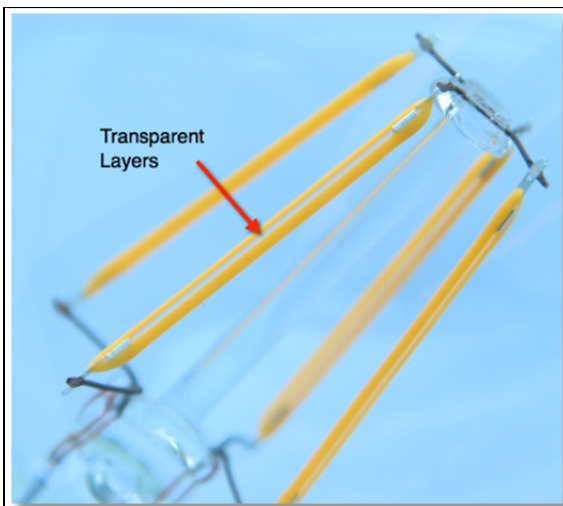
1 33. Claim 1 of the '789 patent requires "a light emitting diode (LED) that emits light
2 out of the LED from multiple sides of the LED." Zlight's ZL-G25-FIL-4W-27K bulb contains an
3 LED that emits light from multiple sides, as shown below:

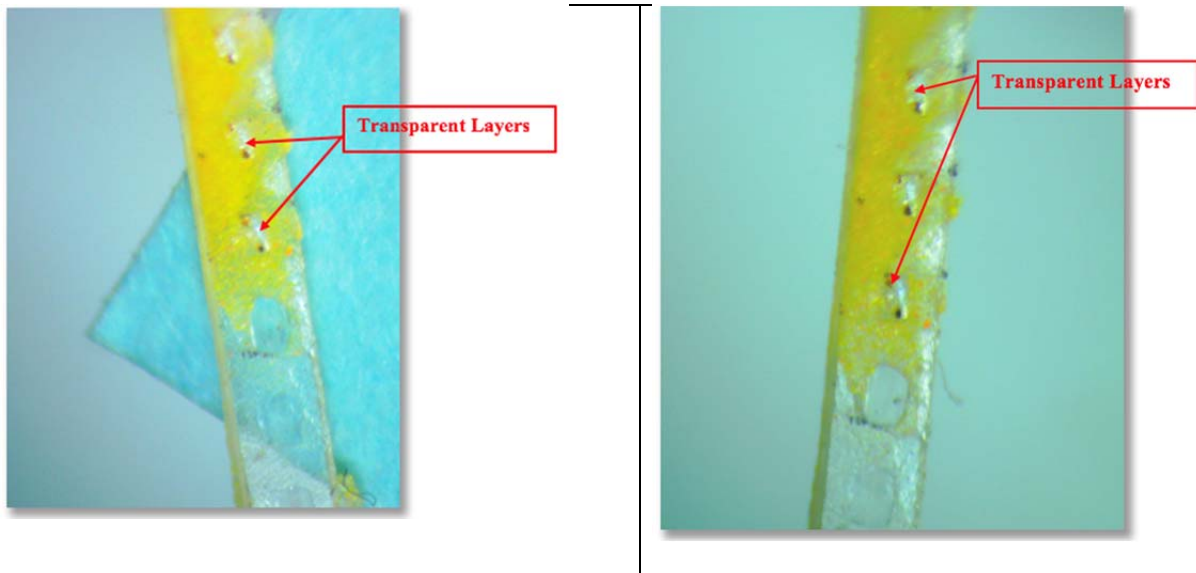


13 <http://www.zlighttech.com/zl-g25-fil-4w-27k-clear-dim.html> (Last visited: August 24, 2016).



16 34. Claim 1 of the '789 patent requires "wherein all layers of the LED are transparent
17 for an emission wavelength except for an emitting layer." Zlight's ZL-G25-FIL-4W-27K bulb
18 contains LEDs that are transparent except for an emitting layer, as shown below:





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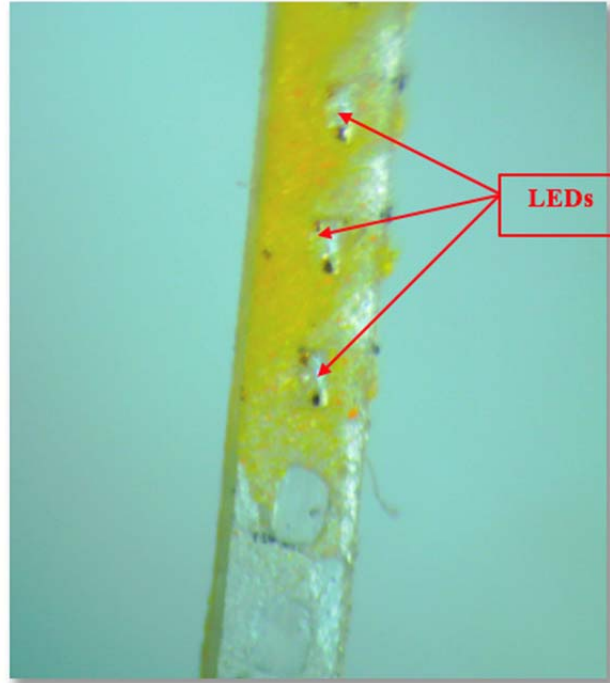
35. Claim 2 of the '789 patent depends from claim 1, and requires “the light is emitted out of the LED from the front and back sides of the LED.” Zlight’s ZL-G25-FIL-4W-27K bulb contains LEDs that emit light out of their front and back sides, as shown below:

Lighting Emitting Diodes:
 Super Bright High Power LED Bars
 360° View Angle
 Soft White (2700K)

<http://www.zlighttech.com/zl-g25-fil-4w-27k-clear-dim.html> (emphasis added) (Last visited: August 24, 2016).

Optical Parameters	
Item	Parameter
Beam Angle	360°
Luminous@1m	68 LX
Color Temp.	2700 K
Lumens Delivery	450 LM
Render Index	80
Lamp Efficiency	120 LM/W

1 <http://www.zlighttech.com/zl-g25-fil-4w-27k-clear-dim.html> (emphasis added) (Last visited:
2 August 24, 2016).



14 36. Zlight is liable as a direct infringer under 35 U.S.C. § 271(a), including liable
15 under the doctrine of equivalents.

16 37. Zlight's customers (e.g., distributors, retailers, online vendors, and end users)
17 directly infringe at least claims 1 and 2 of the '789 patent by making, using, selling, and/or
18 offering for sale in the United States, and/or importing into the United states, products
19 encompassed by those claims. Zlight has actively induced infringement of, and continues to
20 actively induce infringement of, at least claims 1 and 2 of the '789 patent under 35 U.S.C. §
21 271(b), either literally and/or under the doctrine of equivalents, by selling, importing, and/or
22 offering for sale at least the Infringing LED Filament Products to its customers with the
23 knowledge of the '789 patent and its claims, with knowledge that its customers will sell, offer to
24 sell, and/or import into the United States the Infringing LED Filament Products, and with
25 knowledge and specific intent to encourage and facilitate those infringing sales of the Infringing
26 LED Filament Products through distributing the products to retailers, distributors, online vendors,
27 and end users and creating and disseminating promotional and marketing materials, instructional
28

1 manuals, product manuals, and other technical materials related to the Infringing LED Filament
2 Products.

3 38. Zlight has contributed to the infringement of, and continues to contribute to the
4 infringement of, at least claims 1 and 2 of the '789 patent under 35 U.S.C. §§ 271(c) and/or
5 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale,
6 and/or importing in to the United States the Infringing LED Filament Products knowing that
7 those products constitute a material part of the inventions claimed in the '789 patent, knowing
8 that those products are especially made or adapted to infringe the '789 patent, and knowing that
9 those products are not staple articles or commodities of commerce suitable for non-infringing
10 use; rather that the components are used for or in systems that infringe at least claims 1 and 2 of
11 the '789 patent.

12 39. Zlight has knowledge of the '789 patent and has had or should have had
13 knowledge that its acts constitute infringement at least since it received a letter notifying it of the
14 relevance of the '789 patent to the accused products on Feb. 25, 2016.

15 40. Zlight's infringement of the '789 patent is willful. Zlight acted despite an
16 objectively high likelihood that its actions constituted infringement of the '789 patent, and the
17 objectively-defined risk was either known to Zlight or so obvious that it should have been known
18 to Zlight. For example, as pled in Paragraphs 37–39, *supra*, Zlight was aware of the '789 patent
19 and was aware or should have been aware of its infringement thereof, yet has continued to sell
20 LED Filament-style light bulbs.

21 VI. PRAYER FOR RELIEF

22 41. The Regents demand trial by jury for all issues so triable.

23
24 WHEREFORE, The Regents respectfully request this Court to:

- 25 A. Enter judgment for The Regents that Zlight has infringed and is infringing one
26 or more claims of the '789 patent;
- 27 B. Enter judgment for The Regents that Zlight's infringement is willful;
- 28 C. Issue a permanent injunction enjoining Zlight from infringing the '789 patent;

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- D. Order that Zlight pay compensatory damages to The Regents, in no event less than a reasonable royalty;
- E. Find this to be an exceptional case, award The Regents treble damages due to Zlight’s deliberate and willful conduct, and order Zlight to pay The Regents’ costs of suit and attorneys’ fees;
- F. Award The Regents interest and costs under 35 U.S.C. § 284;
- G. Award The Regents pre-judgment interest; and
- H. Order such other relief as the Court deems appropriate.

Dated: November 7, 2016

Respectfully submitted,

/s/ Perry R. Clark
David C. Radulescu, Ph.D. (to be admitted *pro hac vice*)
Email: david@radip.com
RADULESCU LLP
The Empire State Building
350 Fifth Avenue, Suite 6910
New York, NY 10118
Telephone: 646-502-5950
Facsimile: 646-502-5959

Perry R. Clark
Email: perry@perryclark.com
Law Offices of Perry R. Clark
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DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff hereby demands a trial by jury on all issues so triable.

Dated: November 7, 2016

Respectfully submitted,

/s/ Perry R. Clark
David C. Radulescu, Ph.D. (to be admitted *pro hac vice*)
Email: david@radip.com
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The Empire State Building
350 Fifth Avenue, Suite 6910
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