### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF TEXAS WACO DIVISION

SENSOR ELECTRONIC TECHNOLOGY, INC.,

Civil Action No. 6:21-cv-322-ADA

Plaintiff.

**DEMAND FOR JURY TRIAL** 

v.

LITE-ON TECHNOLOGY CORPORATION, LITE-ON TECHNOLOGY USA, INC., LITE-ON, INC., and LITE-ON TRADING USA, INC.,

Defendants.

LITE-ON TECHNOLOGY CORPORATION,

Counterclaim-Plaintiff,

and

GENESIS PHOTONICS, INC.

Third-Party Plaintiff,

v.

SENSOR ELECTRONIC TECHNOLOGY, INC.

Counterclaim-Defendant.

## <u>DEFENDANTS' ANSWER, AFFIRMATIVE DEFENSES</u> <u>AND COUNTERCLAIMS TO PLAINTIFF'S FIRST AMENDED COMPLAINT</u>

Defendants Lite-On Technology Corporation, Lite-On Technology USA, Inc., Lite-On, Inc., and Lite-On Trading USA, Inc. (collectively, "Defendants" or "Lite-On") by and through their undersigned counsel, hereby submit their Answer, Affirmative Defenses, and Counterclaims to the First Amended Complaint ("FAC") filed by Sensor Electronic Technology, Inc. ("SETi" or "Plaintiff") on May 13, 2021, as set forth below. Lite-On denies that it has infringed or infringes

Lite-On

Ex. 1022 p. 0001

any valid and enforceable claim of the patents-in-suit, and Lite-On denies all allegations of the FAC that are not expressly admitted below.

### **INTRODUCTION**

- 1. Lite-On admits that the FAC purports to set forth a cause of action for patent infringement. Lite-On denies any remaining allegations of Paragraph 1 of the FAC.
  - 2. Lite-On admits the allegations of Paragraph 2 of the FAC.
  - 3. Lite-On admits the allegations of Paragraph 3 of the FAC.

#### THE PARTIES

- 4. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the allegations of Paragraph 4 of the FAC and therefore denies them.
- 5. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the allegations of Paragraph 5 of the FAC and therefore denies them.
- 6. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the allegations of Paragraph 6 of the FAC and therefore denies them.
- 7. Lite-On admits that Lite-On Technology Corporation is a publicly held Taiwanese corporation, traded on the Taiwanese Stock Exchange, with a principal place of business at 392 Ruey Kwang Road, Neihu, Taipei 114, Taiwan, R.O.C. Lite-On admits that Lite-On Technology Corporation manufactures and markets LED products. Lite-On denies any remaining allegations of Paragraph 7 of the FAC.
- 8. Lite-On admits that Lite-On Technology USA, Inc. is a Delaware corporation. Lite-On denies any remaining allegations of Paragraph 8 of the FAC.
  - 9. Lite-On admits the allegations of Paragraph 9 of the FAC.

- 10. Lite-On admits that Lite-On, Inc. is a California corporation and a wholly-owned subsidiary of Lite-On Technology USA, Inc., with its principal place of business at 720 S. Hillview Drive, Milpitas, CA 95035. Lite-On admits that Lite-On, Inc. has a sales office in Austin, Texas. Lite-On denies any remaining allegations of Paragraph 10 of the FAC.
  - 11. Lite-On admits the allegations of Paragraph 11 of the FAC.
- 12. Lite-On admits that Lite-On, Inc. has a sales office in Austin, Texas. Lite-On denies any remaining allegations of Paragraph 12 of the FAC.
  - 13. Lite-On admits the allegations of Paragraph 13 of the FAC.
- 14. Lite-On admits that Lite-On Trading USA, Inc. is a California corporation and a wholly-owned subsidiary of Lite-On Technology USA, Inc., with its principal place of business at 720 S. Hillview Drive, Milpitas, CA 95035. Lite-On admits that Lite-On Trading USA, Inc. has a sales office in Austin, Texas. Lite-On denies any remaining allegations of Paragraph 14 of the FAC.
- 15. Lite-On admits that Lite-On, Inc. has a sales office in Austin, Texas, located at 1826 Kramer Lane, Building A, Suite D, Austin, TX 78758. Lite-On denies any remaining allegations of Paragraph 15 of the FAC.
  - 16. Lite-On admits the allegations of Paragraph 16 of the FAC.
  - 17. Lite-On admits the allegations of Paragraph 17 of the FAC.
  - 18. Lite-On denies the allegations of Paragraph 18 of the FAC.
  - 19. Lite-On denies the allegations of Paragraph 19 of the FAC.
  - 20. Lite-On denies the allegations of Paragraph 20 of the FAC.

### **JURISDICTION AND VENUE**

21. Lite-On admits that the FAC purports to state an action for patent infringement arising under the patent laws of the United States but denies that Lite-On has infringed the Asserted Patents. Lite-On admits that this Court has subject matter jurisdiction over actions for alleged patent infringement pursuant to 28 U.S.C. §§ 1331 and 1338(a) only to the extent the FAC purports to set forth allegations of patent infringement arising under the patent laws of the United States. The remainder of Paragraph 21 of the FAC states conclusions of law to which no response is required.

22. Paragraph 22 of the FAC states conclusions of law to which no response is required. To the extent a response is required, Lite-On admits that Lite-On Technology Corporation is not resident in the United States, and denies any remaining allegations of Paragraph 22 of the FAC.

- 23. Paragraph 23 of the FAC states conclusions of law to which no response is required. To the extent a response is required, Lite-On denies the allegations of Paragraph 23 of the FAC.
- 24. Paragraph 24 of the FAC states conclusions of law to which no response is required. To the extent a response is required, Lite-On denies the allegations of Paragraph 24 of the FAC.

### PATENTS-IN-SUIT

- 25. Lite-On admits that the face of the '906 Patent indicates that it is titled "Stress Relieving Semiconductor Layer," that it issued on May 3, 2016, and that it lists Shatalov *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 25 of the FAC and therefore denies them.
  - 26. Lite-On admits that Exhibit 1 of the FAC appears to be a copy of the '906 Patent.
- 27. Lite-On admits that the face of the '952 Patent indicates that it is titled "Stress Relieving Semiconductor Layer," that it issued on October 29, 2019, and that it lists Shatalov *et*

al. as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 27 of the FAC and therefore denies them.

- 28. Lite-On admits that Exhibit 2 of the FAC appears to be a copy of the '952 Patent.
- 29. Lite-On admits that the face of the '562 Patent indicates that it is titled "Profiled Contact for Semiconductor Device," that it issued on October 8, 2013, and that it lists Simin *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 29 of the FAC and therefore denies them.
  - 30. Lite-On admits that Exhibit 3 of the FAC appears to be a copy of the '562 Patent.
- 31. Lite-On admits that the face of the '848 Patent indicates that it is titled "Contact Configuration for Optoelectronic Device," that it issued on December 4, 2018, and that it lists Gaevski *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 31 of the FAC and therefore denies them.
  - 32. Lite-On admits that Exhibit 4 of the FAC appears to be a copy of the '848 Patent.
- 33. Lite-On admits that the face of the '785 Patent indicates that it is titled "Contact Configuration for Optoelectronic Device," that it issued on December 1, 2020, and that it lists Dobrinsky *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 33 of the FAC and therefore denies them.
  - 34. Lite-On admits that Exhibit 5 of the FAC appears to be a copy of the '785 Patent.
- 35. Lite-On admits that the face of the '496 Patent indicates that it is titled "Light Emitting Heterostructure with Partially Relaxed Semiconductor Layer," that it issued on May 8, 2018, and that it lists Shatalov *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 35 of the FAC and therefore denies them.

- 36. Lite-On admits that Exhibit 6 of the FAC appears to be a copy of the '496 Patent.
- 37. Lite-On admits that the face of the '420 Patent indicates that it is titled "Device with Transparent and Higher Conductive Regions in Lateral Cross Section of Semiconductor Layer," that it issued on May 26, 2015, and that it lists Shur *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 37 of the FAC and therefore denies them.
  - 38. Lite-On admits that Exhibit 7 of the FAC appears to be a copy of the '420 Patent.
- 39. Lite-On admits that the face of the '156 Patent indicates that it is titled "Device with Transparent and Higher Conductive Regions in Lateral Cross Section of Semiconductor Layer," that it issued on September 10, 2019, and that it lists Shur *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 39 of the FAC and therefore denies them.
  - 40. Lite-On admits that Exhibit 8 of the FAC appears to be a copy of the '156 Patent.
- 41. Lite-On admits that the face of the '117 Patent indicates that it is titled "Semiconductor Structure with Inhomogeneous Regions," that it issued on March 20, 2018, and that it lists Shatalov *et al.* as inventors. Lite-On lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations of Paragraph 41 of the FAC and therefore denies them.
  - 42. Lite-On admits that Exhibit 9 of the FAC appears to be a copy of the '117 Patent.

## COUNT I ALLEGED INFRINGEMENT OF THE '906 PATENT

- 43. Lite-On denies the allegations of Paragraph 43 of the FAC.
- 44. Lite-On denies the allegations of Paragraph 44 of the FAC.
- 45. Lite-On denies the allegations of Paragraph 45 of the FAC.

- 46. Lite-On denies the allegations of Paragraph 46 of the FAC.
- 47. Lite-On denies the allegations of Paragraph 47 of the FAC.
- 48. Lite-On denies the allegations of Paragraph 48 of the FAC.

## COUNT II ALLEGED INFRINGEMENT OF THE '952 PATENT

- 49. Lite-On denies the allegations of Paragraph 49 of the FAC.
- 50. Lite-On denies the allegations of Paragraph 50 of the FAC.
- 51. Lite-On denies the allegations of Paragraph 51 of the FAC.
- 52. Lite-On denies the allegations of Paragraph 52 of the FAC.
- 53. Lite-On denies the allegations of Paragraph 53 of the FAC.
- 54. Lite-On denies the allegations of Paragraph 54 of the FAC.

## COUNT III ALLEGED INFRINGEMENT OF THE '562 PATENT

- 55. Lite-On denies the allegations of Paragraph 55 of the FAC.
- 56. Lite-On denies the allegations of Paragraph 56 of the FAC.
- 57. Lite-On denies the allegations of Paragraph 57 of the FAC.
- 58. Lite-On denies the allegations of Paragraph 58 of the FAC.
- 59. Lite-On denies the allegations of Paragraph 59 of the FAC.
- 60. Lite-On denies the allegations of Paragraph 60 of the FAC.
- 61. Lite-On denies the allegations of Paragraph 61 of the FAC.

## COUNT IV ALLEGED INFRINGEMENT OF THE '848 PATENT

- 62. Lite-On denies the allegations of Paragraph 62 of the FAC.
- 63. Lite-On denies the allegations of Paragraph 63 of the FAC.
- 64. Lite-On denies the allegations of Paragraph 64 of the FAC.

- 65. Lite-On denies the allegations of Paragraph 65 of the FAC.
- 66. Lite-On denies the allegations of Paragraph 66 of the FAC.
- 67. Lite-On denies the allegations of Paragraph 67 of the FAC.
- 68. Lite-On denies the allegations of Paragraph 68 of the FAC.

# COUNT V ALLEGED INFRINGEMENT OF THE '785 PATENT

- 69. Lite-On denies the allegations of Paragraph 69 of the FAC.
- 70. Lite-On denies the allegations of Paragraph 70 of the FAC.
- 71. Lite-On denies the allegations of Paragraph 71 of the FAC.
- 72. Lite-On denies the allegations of Paragraph 72 of the FAC.
- 73. Lite-On denies the allegations of Paragraph 73 of the FAC.
- 74. Lite-On denies the allegations of Paragraph 74 of the FAC.
- 75. Lite-On denies the allegations of Paragraph 75 of the FAC.

# <u>COUNT VI</u> ALLEGED INFRINGEMENT OF THE '496 PATENT

- 76. Lite-On denies the allegations of Paragraph 76 of the FAC.
- 77. Lite-On denies the allegations of Paragraph 77 of the FAC.
- 78. Lite-On denies the allegations of Paragraph 78 of the FAC.
- 79. Lite-On denies the allegations of Paragraph 79 of the FAC.
- 80. Lite-On denies the allegations of Paragraph 80 of the FAC.

## COUNT VII ALLEGED INFRINGEMENT OF THE '420 PATENT

- 81. Lite-On denies the allegations of Paragraph 81 of the FAC.
- 82. Lite-On denies the allegations of Paragraph 82 of the FAC.
- 83. Lite-On denies the allegations of Paragraph 83 of the FAC.

- 84. Lite-On denies the allegations of Paragraph 84 of the FAC.
- 85. Lite-On denies the allegations of Paragraph 85 of the FAC.
- 86. Lite-On denies the allegations of Paragraph 86 of the FAC.
- 87. Lite-On denies the allegations of Paragraph 87 of the FAC.

# COUNT VIII ALLEGED INFRINGEMENT OF THE '156 PATENT

- 88. Lite-On denies the allegations of Paragraph 88 of the FAC.
- 89. Lite-On denies the allegations of Paragraph 89 of the FAC.
- 90. Lite-On denies the allegations of Paragraph 90 of the FAC.
- 91. Lite-On denies the allegations of Paragraph 91 of the FAC.
- 92. Lite-On denies the allegations of Paragraph 92 of the FAC.
- 93. Lite-On denies the allegations of Paragraph 93 of the FAC.
- 94. Lite-On denies the allegations of Paragraph 94 of the FAC.

# <u>COUNT IX</u> ALLEGED INFRINGEMENT OF THE '117 PATENT

- 95. Lite-On denies the allegations of Paragraph 95 of the FAC.
- 96. Lite-On denies the allegations of Paragraph 96 of the FAC.
- 97. Lite-On denies the allegations of Paragraph 97 of the FAC.
- 98. Lite-On denies the allegations of Paragraph 98 of the FAC.
- 99. Lite-On denies the allegations of Paragraph 99 of the FAC.
- 100. Lite-On denies the allegations of Paragraph 100 of the FAC.
- 101. Lite-On denies the allegations of Paragraph 101 of the FAC.
- 102. Lite-On denies the allegations of Paragraph 102 of the FAC.

### WILLFULNESS

103. Lite-On denies the allegations of Paragraph 103 of the FAC.

104. Lite-On denies the allegations of Paragraph 104 of the FAC.

FAC.

105. Lite-On denies that SETi is entitled to the relief it seeks in Paragraph 105 of the

### PRAYER FOR RELIEF

106. Paragraph 106 of the FAC sets forth SETi's requested relief to which no response is required. Lite-On denies that SETi is entitled to any of the relief it seeks in Sub-Paragraphs (A) through (F) in its Prayer for Relief, or any relief whatsoever.

### **JURY DEMAND**

107. No answer is required to SETi's Demand for A Jury Trial. However, to the extent that an answer is required, Lite-On admits SETi has demanded a jury trial on all issues triable of right by a jury.

### **LITE-ON'S AFFIRMATIVE DEFENSES**

Subject to the answers above, and without assuming any burden not imposed by operation of law, Lite-On asserts the following affirmative defenses in response to the allegations of SETi's FAC. Lite-On expressly reserves the right to assert different and additional legal or equitable defenses that may now exist or in the future be available based on discovery and further investigation in this case.

# FIRST AFFIRMATIVE DEFENSE (Failure to State a Claim)

SETi's FAC fails to state a claim upon which relief can be granted.

# SECOND AFFIRMATIVE DEFENSE (Invalidity)

All the asserted claims of the Patents-in-suit are invalid for failure to satisfy one or more of the requirements and/or conditions for patentability under Title 35, United States Code § et seq., including without limitation §§ 101, 102, 103, and/or 112.

Lite-On Ex. 1022 p. 0010 THIRD AFFIRMATIVE DEFENSE

(Non-Infringement)

Lite-On does not infringe and has not infringed, either literally or under the doctrine of

equivalents, whether directly, indirectly, contributorily, by inducement, or otherwise, any asserted

claims of the Patents-in-suit as properly construed and limited by the doctrine of prosecution

history estoppel.

FOURTH AFFIRMATIVE DEFENSE

(Prosecution History Estoppel)

SETi is estopped, based on statements, representations, and admissions made during

prosecution of the patent applications that led to the '906 Patent, the '952 Patent, the '562 Patent,

the '848 Patent, the '785 Patent, the '496 Patent, the '420 Patent, the '156 Patent, and the '117

Patent, from asserting that the claims of the asserted patents are infringed by Lite-On or Lite-On's

products, either directly, indirectly, contributorily, through the doctrine of equivalents, or

otherwise. Under the doctrine of prosecution history estoppel, SETi cannot use the doctrine of

equivalents to reclaim claim scope surrendered during prosecution.

FIFTH AFFIRMATIVE DEFENSE

(Failure to Give Notice)

The relief sought by SETi is barred or limited from recovery, in whole or in part, by the

failure of SETi to give proper notice to Lite-On or the public pursuant to 35 U.S.C. § 287. SETi's

requested relief is barred or otherwise limited for this reason.

SIXTH AFFIRMATIVE DEFENSE

(No Willful Infringement)

Lite-On has not willfully infringed any of the patents-in-suit.

Lite-On

### SEVEN AFFIRMATIVE DEFENSE

(No Injunctive Relief)

SETi is not entitled to injunctive relief because any alleged injury to the Plaintiff is not immediate or irreparable and Plaintiff has an adequate remedy at law.

## EIGHTH AFFIRMATIVE DEFENSE

(Limitations on Damages and Costs)

SETi's right to recover damages, or costs, if any, is limited, including without limitation by 35 U.S.C. §§ 286, 287, and/or 288.

### RESERVATION OF ADDITIONAL DEFENSES

Lite-On reserve all defenses under Rule 8(c) of the Federal Rules of Civil Procedure, the patent laws of the United States, and any other defenses, at law or in equity, which may now exist or in the future may be available based on discovery and further factual investigation in this case. Lite-On reserves the right to seek leave to amend this answer to add to, amend, withdraw, or modify these defenses as its investigation continues and as discovery may require.

### **COUNTERCLAIMS**

Without admitting any of the above allegations of Sensor Electronic Technology, Inc. ("SETi") other than those expressly admitted herein, and without prejudice to Defendants to plead additional counterclaims as the facts of the matter warrant, Defendant and Counterclaim-Plaintiff Lite-On Technology Corporation ("LTC") and Third-Party Plaintiff Genesis Photonics Inc. ("GPI"), which is joined pursuant to Rule 19(a)(1) of the Federal Rules of Civil Procedure, assert the following Counterclaims against SETi:

#### THE PARTIES

1. Counterclaim-Plaintiff LTC was founded in 1975 and is a publicly held Taiwanese corporation with its principal place of business is at 392 Ruey Kwang Road, Neihu, Taipei 114,

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Taiwan, R.O.C. LTC was the first listed electronics company in Taiwan and is a world-leading designer and manufacturer of optoelectronic and other electronic products.

2. Third-Party Plaintiff GPI was founded in 2002 in Taiwan, and has its principal of

business at No.31, Sec. 2, Huandong Rd., Tainan Science Park, Tainan 741, Taiwan, R.O.C. GPI

has more than 20 years of experience in GaN semiconductor technology and integration

capabilities including epitaxy, flip chip, chip scale package (CSP), micro LED, and ADB systems.

3. Upon information and belief based only on Paragraph 4 of the FAC, Counterclaim-

Defendant SETi is a corporation organized and existing under the laws of the State of New York

with its principal place of business at 1195 Atlas Rd., Columbia, South Carolina.

4. On information and belief, SETi manufactures, imports, offers to sell and/or sells

the UV LED products that are accused of infringement herein in the United States, including in

this Judicial District.

### **JURISDICTION AND VENUE**

5. LTC's and GPI's Counterclaims arise under the Patent Laws of the United States,

35 U.S.C. § 1 et seq.

6. This Court has subject matter jurisdiction over the Counterclaims under 28 U.S.C.

§§ 1331 and 1338(a).

7. The Court has personal jurisdiction over SETi based on its filing of the FAC in this

jurisdiction.

8. Joinder of GPI as a Third-Party Plaintiff in this action is proper and required under

Federal Rule of Civil Procedure 19(a)(1).

9. GPI is subject to service of process and voluntarily joins this action as Third-Party

Plaintiff.

Lite-On

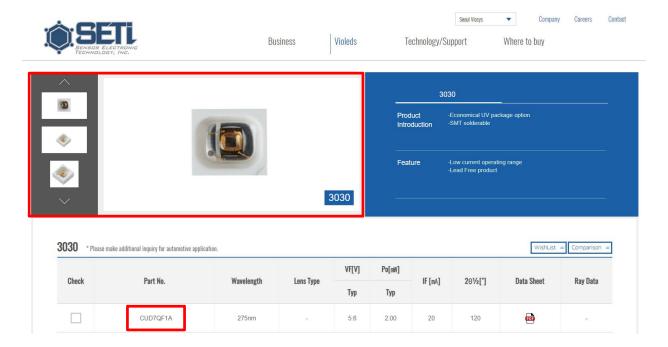
- 10. Joinder of GPI to this litigation will not deprive the Court of subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a), as LTC's and GPI's Counterclaims arise under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq*.
- 11. The questions of law and fact related to U.S. Patent Nos. Patent No. 8,587,013 (the "'013 Patent"), U.S. Patent No. 8,872,202 (the "'202 Patent"), U.S. Patent No. RE47,088 (the "'088 Patent"), Patent No. 8,829,549 (the "'549 patent"), are common to all the parties, including GPI. Any decision of this Court with respect to the infringement of the '013, '202, '088, or '549 Patents may prejudice GPI if it is not joined.
- 12. Accordingly, and due to GPI's claimed interests relating to the subject of this action, including because it is co-owner of the '013, '202, '088, and '549 Patents as alleged herein, GPI's joinder is required under Rule 19(a)(1) for the following independent reasons: (1) in GPI's absence, the Court cannot accord complete relief among the existing parties; (2) GPI claims an interest relating to the subject matter and is so situated that disposing of the action in GPI's absence may, as a practical matter impair or impede GPI's ability to protect the interest, and may leave an existing party subject to a substantial risk of incurring double, multiple, or otherwise inconsistent obligations because of the interest.
- 13. Venue over the Counterclaims is proper based on SETi's filing of the FAC in this jurisdiction.

# FIRST COUNTERCLAIM INFRINGEMENT OF THE '685 PATENT

- 14. Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI re-allege and incorporate by reference the allegations contained in foregoing Paragraphs 1-13 of their Counterclaims.
- 15. LTC is the lawful owner of all right, title, and interest in U.S. Patent No. 10,916,685, titled "Package Structure and Manufacturing Method Thereof," including the right to

Lite-On Ex. 1022 p. 0014 sue and to recover for any and all infringement thereof. The '685 Patent was duly and legally issued on February 9, 2021 by the United States Patent and Trademark Office and names Wei-Te Cheng, *et al.* as the inventors. A true and accurate copy of the '685 Patent is attached hereto as Exhibit A.

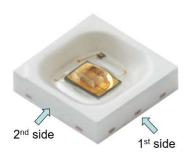
16. SETi has infringed and continues to infringe one or more claims of the '685 Patent, including but not limited to exemplary Claim 1, pursuant to 35 U.S.C. § 271(a) at least by, without authority, making, using, offering to sell, and/or selling the CUD7QF1A UV LED within the United States or importing the CUD7QF1A UV LED into the United States. The screenshot below identifies the CUD7QF1A UV LED.<sup>1</sup>



17. Below are the X-ray images and Optical Micrograph ("OM") view showing the top/bottom and perspective of the LED structure of the CUD7QF1A UV LED.

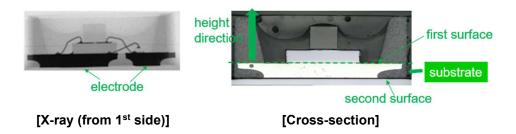
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<sup>&</sup>lt;sup>1</sup> http://www.s-et.com/en/product/PKG/?sub=13&seq=72.

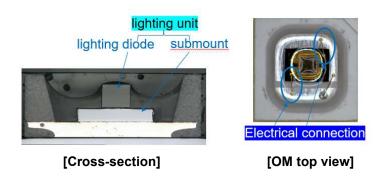




18. The structure in the X-ray image (from 1<sup>st</sup> side of the CUD7QF1A UV LED) and the cross-section view shows a substrate that comprises a first surface (i.e., the upper surface), a second surface (i.e., the lower surface) and a pair of electrodes, and defines a height direction perpendicular to the first surface.

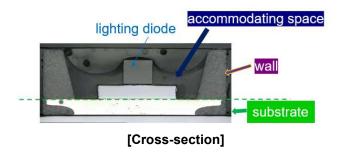


19. The CUD7QF1A UV LED comprises a lighting unit that includes a lighting diode that is mounted on a submount disposed on the first surface of the substrate. The light diode comprises a top surface and an adjacent surrounding lateral surface; and electrically connects to the submount first then further electrically connects to the electrodes via wires.

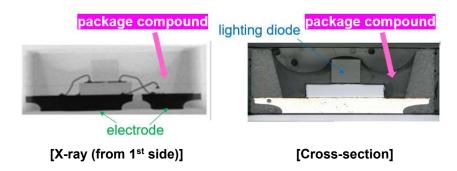


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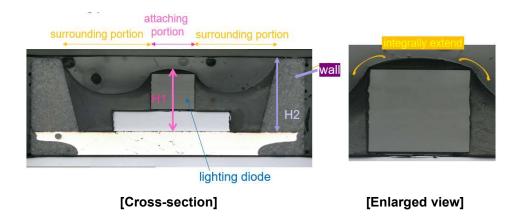
20. The CUD7QF1A UV LED further comprises a wall (i.e., the upper portion of the housing) disposed on the first surface of the substrate and cooperatively defines an accommodating space where the lighting diode is arranged in.



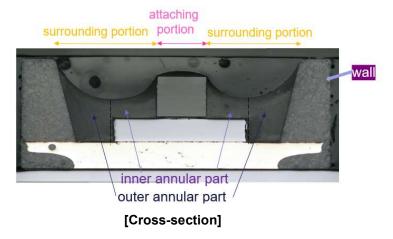
21. The transparent resin in the accommodating space as shown in the images below is the package compound that embeds the entire lighting diode and a portion of the electrodes.



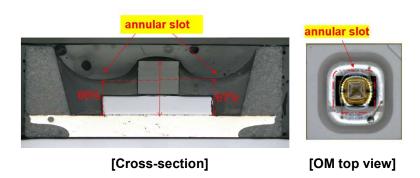
22. Specifically, the package compound comprises an attaching portion that is the transparent resin directly on the lighting diode. And as shown below, the height of the top end of the attaching portion (H1) with respect to the first surface of the substrate is less than the height of the wall (H2) with respect to the first surface of the substrate. Meanwhile, the transparent resin around the side surface of the lighting unit is the surrounding portion that surrounds the surrounding lateral surface of the lighting unit and integrally extends from the attaching portion so that light emitted from the surrounding lateral surface of the lighting unit can be directly guided upward through the surrounding portion.



23. Furthermore, shown in the image below, the surrounding portion has an inner annular part and an outer annular part, wherein the inner annular part is adjacent to the attaching portion and the outer annular part connected to an inner surface of the wall.

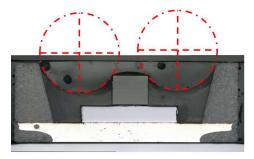


24. The transparent resin which serves as the surrounding portion has an annular slot between the lighting unit and the wall, wherein the bottom end of the annular slot is located at a position aligning with about 65%~75% of the height of the lighting unit.



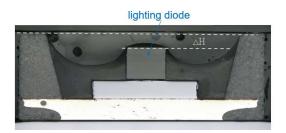
Lite-On Ex. 1022 p. 0018

- 25. Because the attaching portion and the surrounding portion are made of the transparent resin, the light generated by the lighting unit can pass there-through; further, the surrounding portion contacts the surrounding lateral surface of the lighting unit.
- 26. As further shown in the image below, the top surface of the surrounding portion is in a curved shape, where the center of a curvature is outside of the accommodating space.



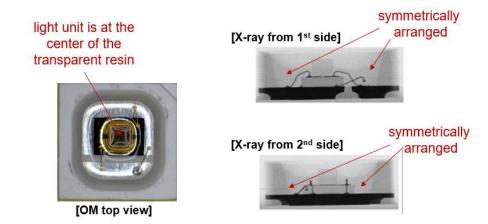
[Cross-section]

27. In addition, the height of a top end of the outer annular part is higher than a height of the top surface of the lighting diode.



[Cross-section]

28. Also, the lighting unit in the CUD7QF1A UV LED is arranged at a center of the transparent resin (i.e., the package compound), and the surrounding portion of the package compound is symmetrically arranged about the attaching portion of the package compound.



- 29. Therefore, SETi's CUD7QF1A UV LED practices every limitation of Claim 1 of the '685 Patent and thus directly infringes Claim 1 of the '685 Patent.
- 30. SETi's infringement has caused and is continuing to cause damage and irreparable injury to LTC. LTC will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.
- 31. LTC is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

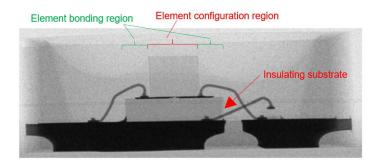
# SECOND COUNTERCLAIM INFRINGEMENT OF THE '013 PATENT

- 32. Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI re-allege and incorporate by reference the allegations contained in the foregoing Paragraphs 1-31 of their Counterclaims.
- 33. LTC and GPI are jointly the lawful owners of all right, title, and interest in U.S. Patent No. 8,587,013, entitled "Semiconductor Package Structure," including the right to sue and to recover for any and all infringement thereof. The '013 Patent was duly and legally issued on November 19, 2013 by the United States Patent and Trademark Office and names Po-Jen Su, *et al.* as the inventors. A true and accurate copy of the '013 Patent is attached hereto as Exhibit B.
- 34. SETi has infringed and continues to infringe one or more claims of the '013 Patent, including but not limited to exemplary Claim 1, pursuant to 35 U.S.C. § 271(a) at least by, without

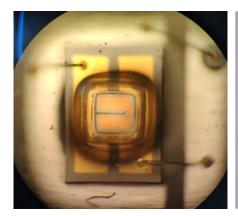
Lite-On Ex. 1022 p. 0020

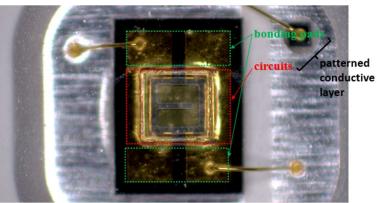
authority, making, using, offering to sell, and/or selling the CUD7QF1A UV LED within the United States or importing the CUD7QF1A UV LED into the United States.

35. The CUD7QF1A UV LED comprises an insulating substrate as shown below, which further comprises an upper surface, wherein the upper surface is divided into an element configuration region and an element bonding region located on an outer side of the element configuration region.

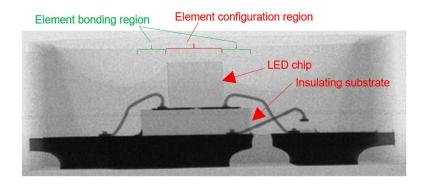


36. As shown above and further in the images below, the CUD7QF1A UV LED comprises a patterned conductive layer, configured on the insulating substrate, and the patterned conductive layer comprises a plurality of circuits and at least one bonding pad. The circuits are located in the element configuration region, and the at least one bonding pad is located in the element bonding region.

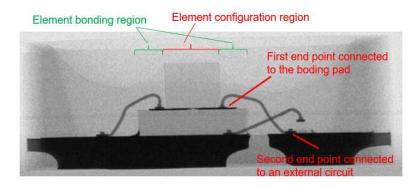




37. The CUD7QF1A UV LED also includes a LED chip, flip chip bonded on the patterned conductive layer, and located in the element configuration region, wherein the LED chip is electrically connected to the circuits.

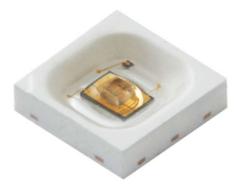


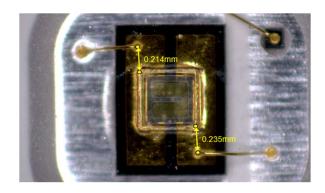
38. A conductive connection part is located in the element bonding region of the CUD7QF1A UV LED, and such conductive connection part is configured on the patterned conductive layer. Specifically, the conductive connection part comprises a first end point and a second end point, the first end point is electrically connected to the bonding pad, and the second end point is electrically connected to an external circuit.



39. The orthographic projection of the LED chip of the CUD7QF1A UV LED on the patterned conductive layer is a rectangle, the bonding pad and a corner of the rectangle are correspondingly disposed, and a horizontal distance between an apex of the corner and the first end point of the conductive connection part is greater than or equal to 30 micrometers (µm).

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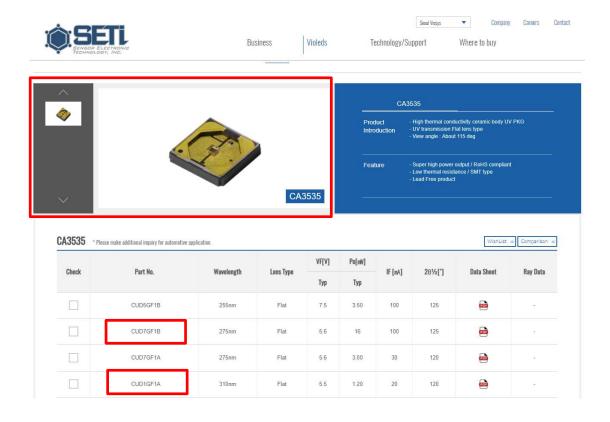
- 40. Therefore, SETi's CUD7QF1A UV LED infringes at least Claim 1 of the '013 Patent.
- 41. SETi's infringement has caused and is continuing to cause damage and irreparable injury to LTC and GPI. LTC and GPI will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.
- 42. LTC and GPI are entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

# THIRD COUNTERCLAIM INFRINGEMENT OF THE '202 PATENT

- 43. Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI re-allege and incorporate by reference the allegations contained in the foregoing Paragraphs 1-42 of their Counterclaims.
- 44. LTC and GPI are jointly the lawful owners of all right, title, and interest in U.S. Patent No. 8,872,202, titled "Light-emitting Device Capable of Improving the Light-emitting Efficiency," including the right to sue and to recover for any and all infringement thereof. The '202 Patent was duly and legally issued on October 28, 2014 by the United States Patent and Trademark Office and names Yi-Ru Huang, *et al.* as the inventors. A true and accurate copy of the '202 Patent is attached hereto as Exhibit C.
- 45. SETi has infringed and continues to infringe one or more claims of the '202 Patent, including but not limited to exemplary Claim 1, pursuant to 35 U.S.C. § 271(a) at least by, without

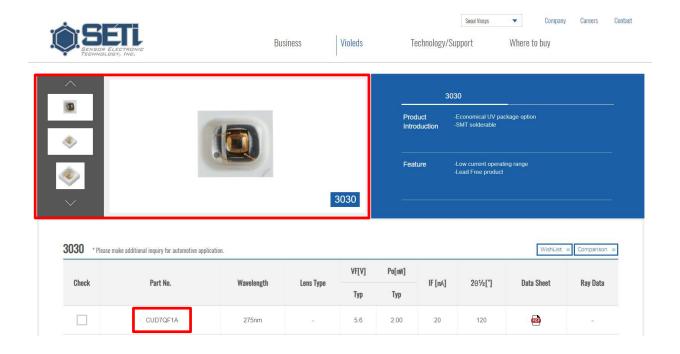
Lite-On Ex. 1022 p. 0023

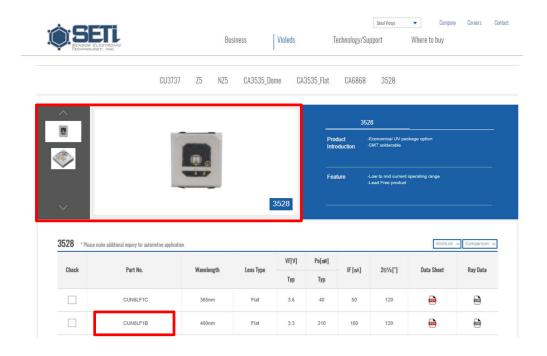
authority, making, using, offering to sell, and/or selling the CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs within the United States or importing the CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs into the United States. The screenshots below identify the CUD1GF1A, CUD7QF1A, CUD7GF1B<sup>2</sup> and CUN0LF1B<sup>3</sup> UV LED.



<sup>&</sup>lt;sup>2</sup> http://www.s-et.com/en/product/PKG/?sub=13&seq=22.

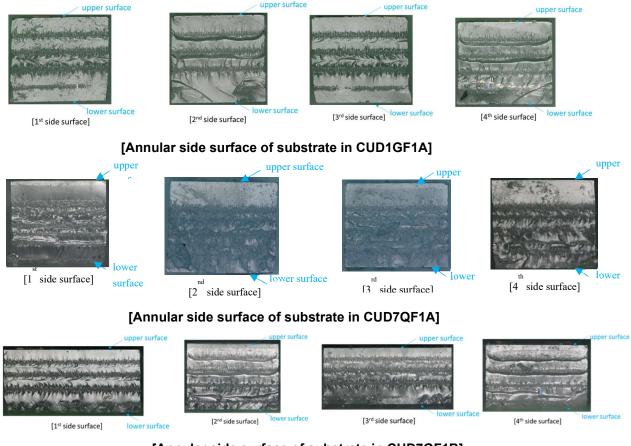
<sup>&</sup>lt;sup>3</sup> http://www.s-et.com/en/product/PKG/?sub=12&seq=67.



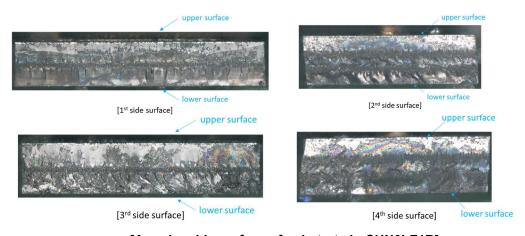


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46. Each of the CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs have a light-emitting device, which comprises a substrate having an upper surface and a lower surface opposite to each other and an annular side surface connecting the upper surface and the lower surface as shown in the microscope images below.

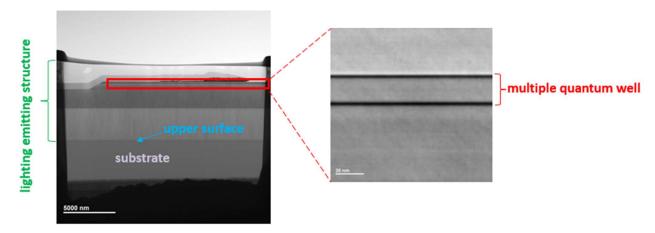


[Annular side surface of substrate in CUD7GF1B]

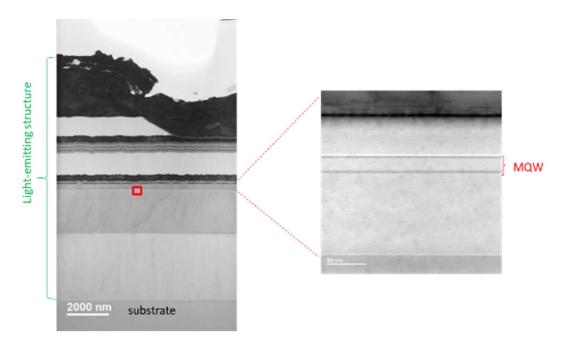


[Annular side surface of substrate in CUN0LF1B]

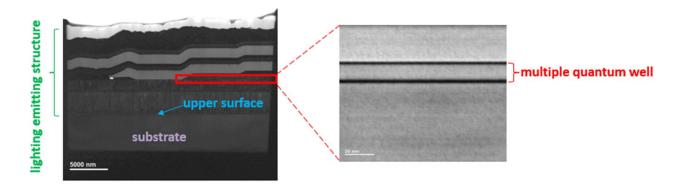
47. As shown in the TEM (transmission electron microscope) images below, each of the light-emitting devices in the CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs comprise a light emitting structure disposed on the upper surface of the substrate.



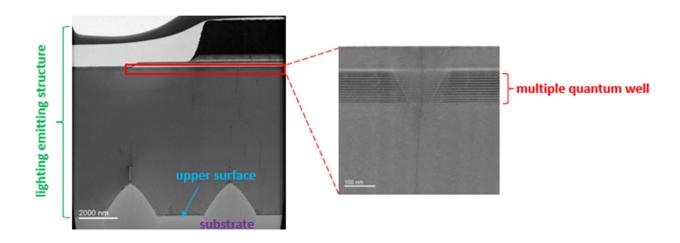
[TEM image of the light-emitting device in CUD1GF1A]



[TEM image of the light-emitting device in CUD7QF1A]



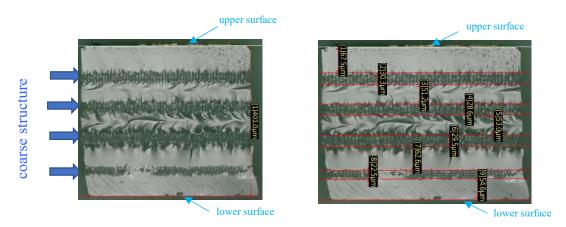
[TEM image of the light-emitting device in CUD7GF1B]



[TEM image of the light-emitting device in CUN0LF1B]

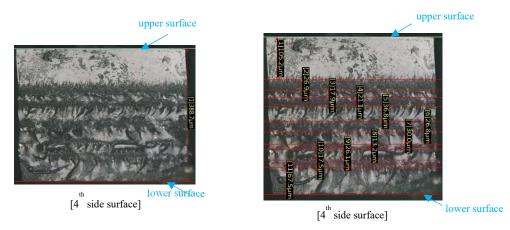
- 48. As further shown in the images below, there is a coarse structure (e.g., structure as indicated by the blue arrows) in each of the CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs that is formed on the annular side surface of the substrate.
- 49. As to the CUD1GF1A UV LED, as shown in the images below, the total thickness of the substrate is about 401  $\mu m$ . The coarse structure includes 4 cuts, which are about 30  $\mu m$ , 28  $\mu m$ , 29  $\mu m$ , 22  $\mu m$  thick, respectively. Therefore, the ratio of the thickness of the substrate and the thickness of the coarse structure is about 3.6 (i.e., greater than 1 and less than 20). Furthermore, the distance from a side of the coarse structure relatively near the upper surface of the substrate to

the upper surface of the substrate is 67.5  $\mu m$  (i.e. greater than 10  $\mu m$  and less than 150  $\mu m$ ), and the distance from a side of the coarse structure relatively near the lower surface of the substrate to the lower surface of the substrate is 54.6  $\mu m$  (i.e. greater than 0  $\mu m$  and less than 100  $\mu m$ ).



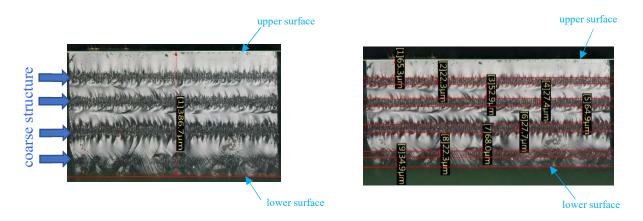
[Side views of the subatrate in CUD1GF1A]

50. As to the CUD7QF1A UV LED, the total thickness of the substrate is about 389 μm as shown in the image below. The coarse structure includes 5 cuts, which are about 27 μm, 21 μm, 27 μm, 13 μm, 18 μm thick, respectively. Therefore, the ratio of the thickness of the substrate and the thickness of the coarse structure is about 3.7 (i.e., greater than 1 and less than 20). Furthermore, the distance from a side of the coarse structure relatively near the upper surface of the substrate to the upper surface of the substrate is 105.2 μm (i.e., greater than 10 μm and less than 150 μm), and the distance from a side of the coarse structure relatively near the lower surface of the substrate to the lower surface of the substrate is 67.5 μm (i.e., greater than 0 μm and less than 100 μm).



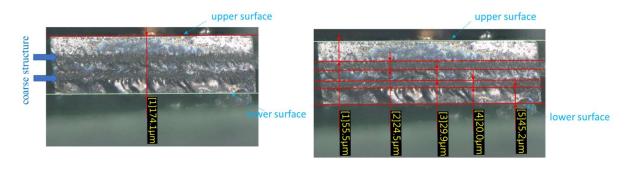
[Side views of the subatrate in CUD7QF1A]

51. As to the CUD7GF1B UV LED, as shown in the images below, the total thickness of the substrate is about 387 μm. The coarse structure includes 4 cuts two of which are about 27 μm thick and two of which is about 22 μm thick. Therefore, the ratio of the thickness of the substrate and the thickness of the coarse structure is about 3.95 (i.e., greater than 1 and less than 20). Furthermore, the distance from a side of the coarse structure relatively near the upper surface of the substrate to the upper surface of the substrate is 65.3 μm (i.e. greater than 10 μm and less than 150 μm), and the distance from a side of the coarse structure relatively near the lower surface of the substrate to the lower surface of the substrate is 34.9 μm (i.e. greater than 0 μm and less than  $100 \mu m$ ).



[Side views of the subatrate in CUD7GF1B]

52. As to the CUN0LF1B UV LED, as shown in the images below, the total thickness of the substrate is about 174.1  $\mu$ m. The coarse structure includes 2 cuts which are about 24  $\mu$ m and 20  $\mu$ m thick, respectively. Therefore, the ratio of the thickness of the substrate and the thickness of the coarse structure is about 3.98 (i.e., greater than 1 and less than 20). Furthermore, the distance from a side of the coarse structure relatively near the upper surface of the substrate to the upper surface of the substrate is 55.5  $\mu$ m (i.e. greater than 10  $\mu$ m and less than 150  $\mu$ m), and the distance from a side of the coarse structure relatively near the lower surface of the substrate to the lower surface of the substrate is 45.2  $\mu$ m (i.e. greater than 0  $\mu$ m and less than 100  $\mu$ m).



[Side views of the subatrate in CUN0LF1B]

53. Therefore, SETi's CUD1GF1A, CUD7QF1A, CUD7GF1B, and CUN0LF1B UV LEDs infringe at least Claim 1 of the '202 Patent.

54. SETi's infringement has caused and is continuing to cause damage and irreparable

injury to LTC and GPI. LTC and GPI will continue to suffer damage and irreparable injury unless

and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

55. LTC and GPI are entitled to injunctive relief and damages in accordance with 35

U.S.C. §§ 271, 281, 283, and 284.

FOURTH COUNTERCLAIM
INFRINGEMENT OF THE '088 PATENT

56. Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI re-allege and incorporate

by reference the allegations contained in the foregoing Paragraphs 1-55 of their Counterclaims.

57. LTC and GPI are jointly the lawful owners of all right, title, and interest in U.S.

Patent No. RE47,088, titled "Nitride Semiconductor Structure and Semiconductor Light Emitting

Device including the same," including the right to sue and to recover for any and all infringement

thereof. The '088 Patent was duly and legally issued on October 16, 2018 by the United States

Patent and Trademark Office and names Yen-Lin Lai, et al. as the inventors. A true and accurate

copy of the '088 Patent is attached hereto as Exhibit D.

58. SETi has infringed and continues to infringe one or more claims of the '088 Patent,

including but not limited to exemplary Claim 14, pursuant to 35 U.S.C. § 271(a) at least by, without

authority, making, using, offering to sell, and/or selling the CUN96A1B, CUN0LF1B,

CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs within the United States or importing the

CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs into the United

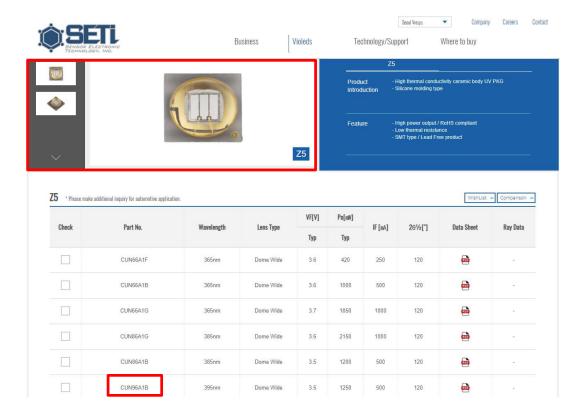
States. The screenshot below identifies the CUN96A1B UV LED.<sup>4</sup> Screenshots identifying the

CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs are provided above in the

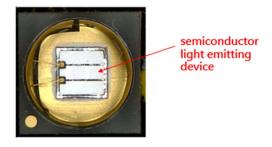
Third Counterclaim.

<sup>4</sup> http://www.s-et.com/en/product/PKG/?sub=12&seq=14.

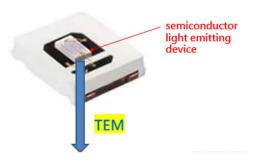
Lite-On



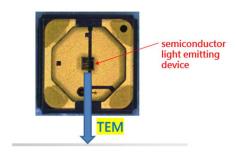
59. The CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs comprise a semiconductor light emitting device, which comprises a nitride semiconductor structure. Shown below are OM images of the epitaxial layers of the semiconductor light emitting device in the accused CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs.



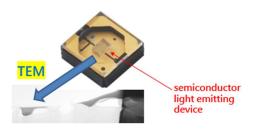
[CUN96A1B]



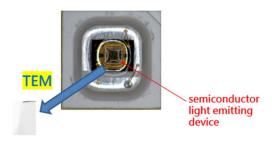
[CUN0LF1B]



[CUD1GF1A]



[CUD7GF1B]

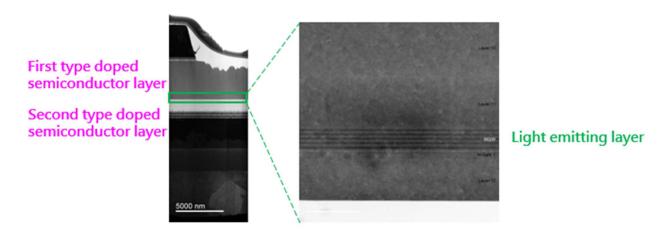


[CUD7QF1A]

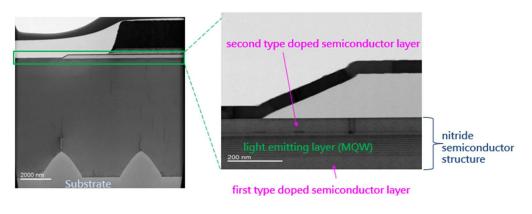
60. Below shows the TEM images of the semiconductor light emitting device in the accused CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs. As

Lite-On Ex. 1022 p. 0034

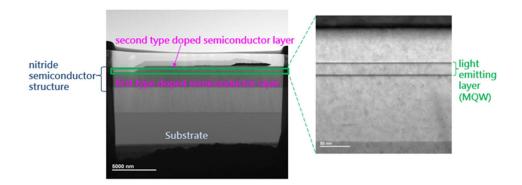
shown in the TEM images, the semiconductor light emitting device comprises a first type doped semiconductor layer (e.g., n-typed semiconductor layer), a second type doped semiconductor layer (e.g., p-typed semiconductor layer), and a light emitting layer disposed between the first type doped semiconductor layer and the second type doped semiconductor layer.



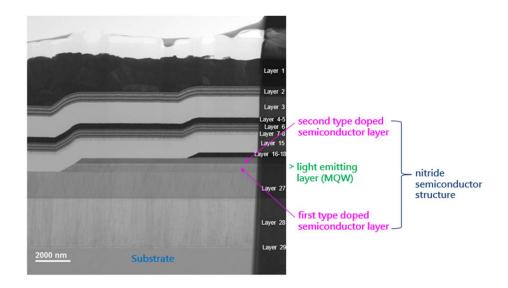
## [CUN96A1B]



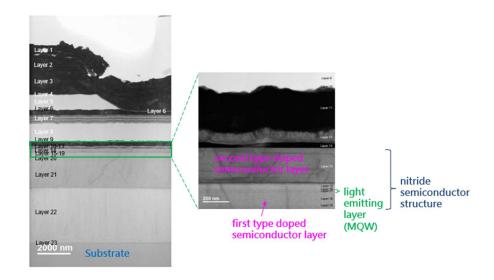
[CUN0LF1B]



## [CUD1GF1A]



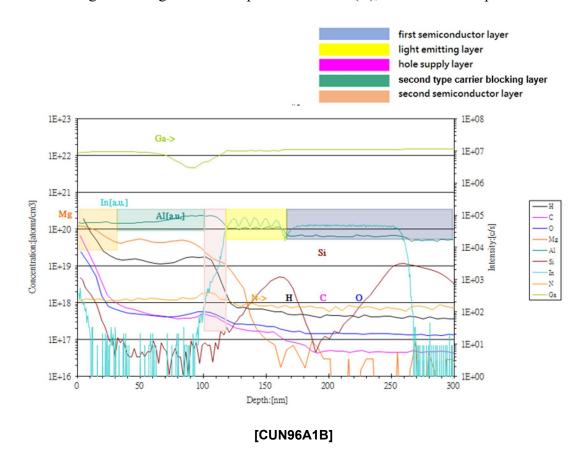
## [CUD7GF1B]



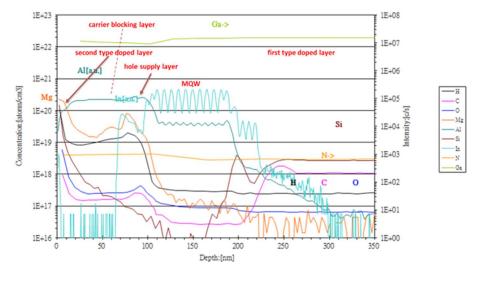
### [CUD7QF1A]

Lite-On Ex. 1022 p. 0036

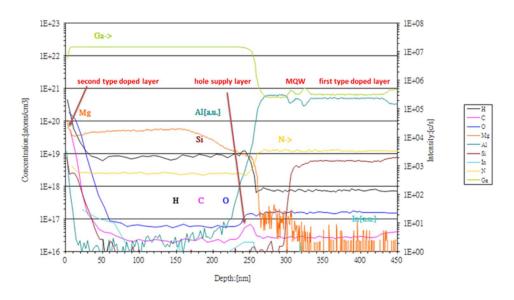
61. There is also a hole supply layer disposed between the light emitting layer and the second type doped semiconductor in the accused CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs. Shown below are SIMS (secondary ion mass spectroscopies) of the epitaxial layers of the semiconductor light emitting device in the accused CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs. As indicated by the SIMS profiles below, the second type doped semiconductor layer of the semiconductor light emitting device is doped with a second type dopant, which is Magnesium (Mg), at a concentration larger than 5×10<sup>19</sup> cm<sup>-3</sup>. In addition, there is a hole supply layer disposed between the light emitting layer and the second type doped semiconductor. The hole supply layer of the semiconductor light emitting device is doped with carbon (C), which is a Group IV-A element.



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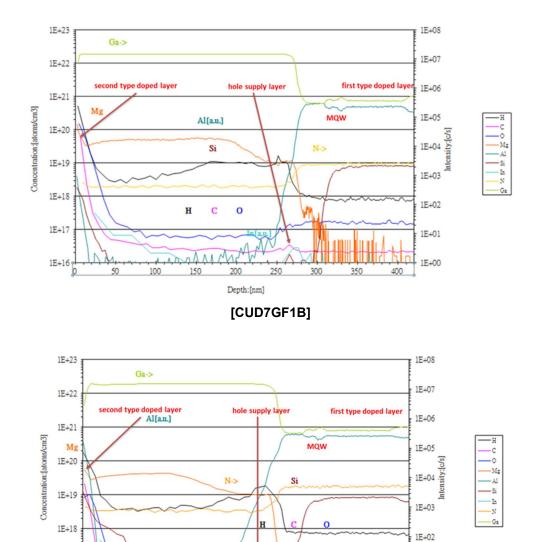


## [CUN0LF1B]



[CUD1GF1A]

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62. Therefore, SETi's CUN96A1B, CUN0LF1B, CUD1GF1A, CUD7GF1B, and CUD7QF1A UV LEDs infringe at least Claims 14 of the '088 Patent.

[CUD7QF1A]

Depth:[nm]

1E+17

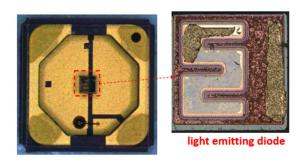
1E+16

63. SETi's infringement has caused and is continuing to cause damage and irreparable injury to LTC and GPI. LTC and GPI will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

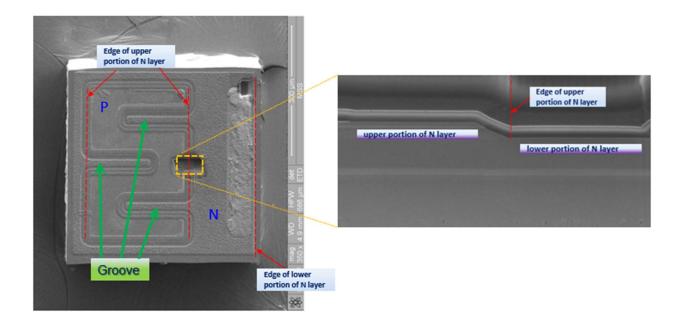
64. LTC and GPI are entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

### <u>FIFTH COUNTERCLAIM</u> INFRINGEMENT OF THE '549 PATENT

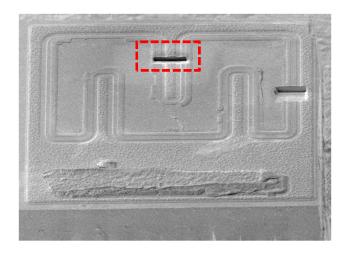
- 65. Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI re-allege and incorporate by reference the allegations contained in the foregoing Paragraphs 1-64 of their Counterclaims.
- 66. LTC and GPI are jointly the lawful owners of all right, title, and interest in U.S. Patent No. 8,829,549, titled "Light Emitting Diode and Flip-chip Light Emitting Diode Package," including the right to sue and to recover for any and all infringement thereof. The '549 Patent was duly and legally issued on September 9, 2014 by the United States Patent and Trademark Office and names Yi-Ru Huang, *et al.* as the inventors. A true and accurate copy of the '549 Patent is attached hereto as Exhibit E.
- 67. SETi has infringed and continues to infringe one or more claims of the '549 Patent, including but not limited to exemplary Claim 1, pursuant to 35 U.S.C. § 271(a) at least by, without authority, making, using, offering to sell, and/or selling the CUD1GF1A UV LED within the United States or importing the CUD1GF1A UV LED into the United States.
- 68. As shown in the OM and TEM images below, the CUD1GF1A UV LED comprises a light emitting diode, which comprises a substrate, a first doped layer (i.e., n-type layer) that is disposed on the substrate, a light emitting layer that is disposed on the first doped layer and a second doped layer (i.e., p-type layer) that is disposed on the light emitting layer. Also, a plurality of grooves penetrates through the p-type layer and the light emitting layer, and thus a partial surface of the n-type layer is exposed.

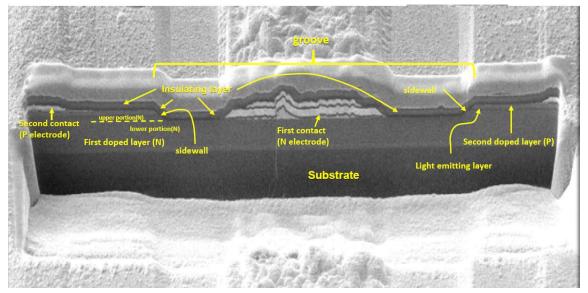


[CUD1GF1A UV]

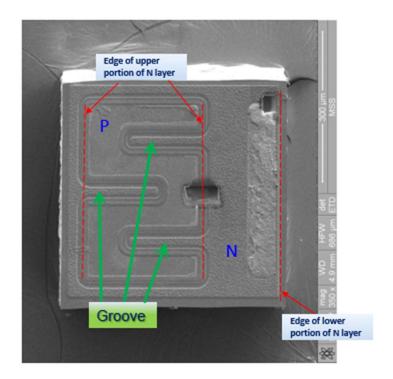


69. As shown in the TEM image below, an insulating layer is disposed over a part of the p-type layer and extending to the sidewalls of the plurality of the grooves.





- 70. Furthermore, the image above shows a first contact (i.e., N electrode) in the plurality of the grooves and electrically connected to the n-type layer, a second contact (i.e., P electrode) on the p-type layer and electrically connected to the p-type layer.
- 71. From a top view of the light emitting diode, one end of at least one of the plurality of grooves extends to the edge of the n-type layer.



- 72. Therefore, SETi's CUD1GF1A UV LED infringes at least Claim 1 of the '549 patent.
- 73. SETi's infringement has caused and is continuing to cause damage and irreparable injury to LTC and GPI. LTC and GPI will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.
- 74. LTC and GPI are entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

### **PRAYER FOR RELIEF**

WHEREFORE, Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI respectfully request that this Court enter judgment in their favor and against SETi as follows:

A. Entry of judgment that SETi has infringed the '685 Patent, '013 Patent, '202 Patent, '088 Patent, and '549 Patent under 35 U.S.C. § 271;

B. A preliminary and permanent injunction restraining and enjoining SETi and its

officers, partners, agents, servants, employees, parents, subsidiaries, divisions, affiliate

corporations, joint ventures, representatives, successors, and assigns, and all others acting in

concert or participation with them from continued infringement under 35 U.S.C. § 271 of the '685

Patent, '013 Patent, '202 Patent, '088 Patent, and '549 Patent;

C. An award of damages adequate to compensate Counterclaim-Plaintiff LTC and

Third-Party Plaintiff GPI for infringement of the '685 Patent, '013 Patent, '202 Patent, '088 Patent,

and '549 Patent, together with prejudgment and post-judgment interest and costs pursuant to 35

U.S.C. § 284;

D. An accounting of all infringing sales and other infringing acts by SETi, and an order

compelling an accounting for infringing acts not presented at trial and an award by the Court of

additional damages for such acts; and

E. Any other relief to Counterclaim-Plaintiff LTC and Third-Party Plaintiff GPI are

entitled or that the Court deems just and proper.

JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Counterclaim-Plaintiff LTC

and Third-Party Plaintiff GPI hereby request a trial by jury on all issues so triable.

DATED: September 17, 2021

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By: /s/ Brian C. Nash

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## **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on September 17, 2021, a true and correct copy of the above and foregoing document has been served on all counsel of record via the Court's ECF system.

/s/ Brian C. Nash Brian C. Nash