

place of business located at 1910-12A Tower 3, China Hong Kong City, 33 Canton Road, Tsim Sha Tsui, 31802888 Hong Kong, and may be served pursuant to the provisions of the Hague Convention. TCT is a leading manufacturer and seller of displays and televisions in the world and in the United States. Upon information and belief, TCT does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

3. Upon information and belief, Defendant TCL Electronics Holdings Limited (“TCL”) is a corporation organized and existing under the laws of the Cayman Islands, with its principal place of business located at 5/F Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong, and may be served pursuant to the provisions of the Hague Convention. TCL is a leading manufacturer and seller of displays and televisions in the world and in the United States. Upon information and belief, TCL does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

4. Upon information and belief, Defendant TCL Technology Group Corporation is a corporation organized and existing under the laws of China, with its principal place of business located at TCL Tech Building, 17 Huifeng Third Road, Zhongkai Hi-Tech Development District, Huizhou City, Guangdong Province, China and may be served pursuant to the provisions of the Hague Convention. Defendant TCL Technology Group Corporation is a leading manufacturer and seller of displays and televisions in the world and in the United States. Upon information and belief, Defendant TCL Technology Group Corporation does business in Texas and in the Eastern District of Texas, directly or through intermediaries. Upon information and belief, Defendant TCL Technology Group Corporation owns the trademark “TCL” which is marked on each of the Accused Products (*e.g.*, televisions and displays).¹

¹ See *e.g.*, <https://www.tcl.com/us/en/products/home-theater#>

5. Upon information and belief, Defendant TCL Communication Limited is a corporation organized and existing under the laws of Hong Kong, with its principal place of business located at 5/F Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong, and may be served pursuant to the provisions of the Hague Convention. TCL is a leading manufacturer and seller of displays and televisions in the world and in the United States. Upon information and belief, TCL does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

6. Upon information and belief, Defendant TCL Communication Technology Holdings Limited is a corporation organized and existing under the laws of China, with its principal place of business located at TCL Communication Technology Building, Block F4, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, 518052 P.R. China, and may be served pursuant to the provisions of the Hague Convention. TCL is a leading manufacturer and seller of displays and televisions in the world and in the United States. Upon information and belief, TCL does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

JURISDICTION

7. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.* This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) and 1367.

8. This Court has specific and personal jurisdiction over the Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. Upon information and belief, the Defendants have sufficient minimum contacts with the forum because Defendants transact substantial business in the State of Texas and in this

Judicial District. Further, the Defendants have, directly or through subsidiaries or intermediaries, committed and continue to commit acts of patent infringement in the State of Texas and in this Judicial District as alleged in this Complaint, as alleged more particularly below. For example, on information and belief, the Accused Products are available for purchase in this Judicial District.

9. Venue is proper in this Judicial District pursuant to 28 U.S.C. § 1391(b) and (c) because the Defendants are foreign companies that may be sued in any Judicial District, including the Eastern District of Texas. The Defendants are subject to personal jurisdiction in this Judicial District and have committed acts of patent infringement in this Judicial District. On information and belief, the Defendants through their own acts and/or through the acts of each other Defendant, makes, uses, sells, and/or offers to sell infringing products within this Judicial District, regularly does and solicits business in this Judicial District, and has the requisite minimum contacts with the Judicial District such that this venue is a fair and reasonable one. Further, upon information and belief, the Defendants have admitted or not contested proper venue in this Judicial District in other patent infringement actions.

PATENTS-IN-SUIT

10. On May 3, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,936,415 (the “’415 Patent”) entitled “Light Source Apparatus And Liquid Crystal Display Having The Same.” A true and correct copy of the ’415 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7936415>.

11. On April 12, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,922,380 (the “’380 Patent”) entitled “Light Unit And Display Device Having The Same.” A true and correct copy of the ’380 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7922380>.

12. On October 22, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,562,200 (the “’200 Patent”) entitled “Lighting Module, Backlight Unit, And Display Device Including The Same.” A true and correct copy of the ’200 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8562200>.

13. On October 25, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,045,091 (the “’091 Patent”) entitled “Backlight Unit And Display Device Having The Same.” A true and correct copy of the ’091 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8045091>.

14. On August 13, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,506,122 (the “’122 Patent”) entitled “Lens And Light Emitting Apparatus Having The Same.” A true and correct copy of the ’122 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8506122>.

15. On November 8, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,052,307 (the “’307 Patent”) entitled “Lens And Light Emitting Apparatus Having The Same.” A true and correct copy of the ’307 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8052307>.

16. On December 31, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,616,729 (the “’729 Patent”) entitled “Lens And Light Emitting Apparatus Having The Same.” A true and correct copy of the ’729 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8616729>.

17. On July 3, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,213,093 (the “’093 Patent”) entitled “Lens And Light Emitting Apparatus Having The Same.” A true and correct copy of the ’093 Patent is available at

<https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8213093>.

18. On January 3, 2017, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,534,744 (the “’744 Patent”) entitled “Light Emitting Apparatus.” A true and correct copy of the ’744 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9534744>.

19. On September 2, 2014, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,823,048 (the “’048 Patent”) entitled “Light Emitting Apparatus.” A true and correct copy of the ’048 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8823048>.

20. On March 12, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,395,183 (the “’183 Patent”) entitled “Light Emitting Apparatus.” A true and correct copy of the ’183 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8395183>.

21. On May 2, 2017, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,638,378 (the “’378 Patent”) entitled “Light Emitting Apparatus.” A true and correct copy of the ’378 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9638378>.

22. On May 13, 2014, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,723,411 (the “’411 Patent”) entitled “Photoluminescent Sheet.” A true and correct copy of the ’411 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8723411>.

23. On August 7, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,237,352 (the “’352 Patent”) entitled “Photoluminescent Sheet.” A true

and correct copy of the '352 Patent is available at <https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/8237352>.

24. LGI is the sole and exclusive owner of all right, title, and interest in the ''415 Patent, '380 Patent, '200 Patent, '091 Patent, '122 Patent, '307 Patent, '729 Patent, '093 Patent, '744 Patent, '048 Patent, '183 Patent, '378 Patent, '411 Patent, and '352 Patent (collectively, the "Patents-in-Suit" or "Asserted Patents") and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement lawsuit. LGI also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

FACTUAL ALLEGATIONS

25. The Patents-in-Suit generally cover systems and methods related to LED lighting and image enhancement for televisions and displays.

26. The ''415 Patent generally relates to an LED light source for displays, (*e.g.* LCD displays) allowing LED module substrates to efficiently and reliably illuminate the display. The technology of the '415 Patent was developed by Jun Seok Park of LG Innotek. By way of example, this technology is implemented today in the LED backlight units and LED strips of the Accused Products (*e.g.*, televisions and displays).

27. The '200 Patent generally relates to an LED backlight unit providing reliable lighting for LCD and other displays. The technology of the '200 Patent was developed by Jun Seok Park of LG Innotek. By way of example, this technology is implemented today in the LED backlight units and LED strips of the Accused Products (*e.g.*, televisions and displays).

28. The '091 Patent generally relates to an LED backlight unit providing improved brightness uniformity for displays and televisions. The technology of the '091 Patent was

developed by Jun Seok Park of LG Innotek. By way of example, this technology is implemented today in the LED backlight units and LED strips of the Accused Products (*e.g.*, televisions and displays).

29. The '380 Patent generally relates to a light unit and display providing improved backlighting for LCD and other displays. The technology of the '380 Patent was developed by Dong Wook Park of LG Innotek. By way of example, this technology is implemented today in the LED backlight units and LED strips of the Accused Products (*e.g.*, televisions and displays).

30. The '122, '307, '729, '093, '744, '048, '183, and '378 Patents generally relate to a light emitting apparatus including a lens with “superior light emitting characteristics in a lateral direction.” The technology described in the '122, '307, '729, '093, '744, '048, '183, and '378 Patents was developed by Gyu Hyeong Bak and Sang Won Lee of LG Innotek. By way of example, this technology is implemented today in the LED backlight units and LED strips of the Accused Products (*e.g.*, televisions and displays).

31. The '411 and '352 Patents generally relate to photoluminescent sheets including a phosphor which may enhance the luminance and chromaticity of televisions and displays. The technology described in the '411 and '352 Patents was developed by Choong-Young Sohn, Young-Joo Ahn, and Young-Wook Ko. By way of example, this technology is implemented today in the Accused Products (*e.g.*, televisions and displays) through their implementation of quantum dot technology.

32. Defendants have infringed and continue to infringe one or more of the Patents-in-Suit by making, using, selling, offering to sell, and/or importing, and by actively inducing others to make, use, sell, offer to sell, and/or importing televisions and displays. For example, the Accused Products include all LED, QLED, and QD-MINI LED televisions or displays, including

at least the S2, S3, S4, S5, 3-Series, 4-Series, C8-Series, P6-Series, S-Series, Q-Class, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products, and components thereof (*e.g.*, backlight components).

33. For example, Defendants sell and offer to sell the Accused Products in the United States through online stores such as Amazon, Walmart, and <https://www.tcl.com/us/en>. Upon information and belief, Defendants sell and offer to sell the Accused Products directly to customers and end-users through their website, as well as through their stores on Amazon and Walmart.

34. For further example, Defendants sell and offer to sell the Accused Products directly to customers and end-users in this District at the Walmart Supercenter in Marshall, Texas 75670 for in-store purchase.

35. Upon information and belief, Defendants are jointly responsible for the sale of the Accused Products to customers in the United States, including through their store at www.tcl.com. For example, the TCL global privacy policy available on www.tcl.com and <https://www.tcl.com/us/en/> (and which applies to all of its subdomains) is on behalf of “TCL and/or its affiliates and subsidiaries (collectively “TCL”, “we”, “us” or “our”).”² For example, upon information and belief, Defendants further sell and offer to sell the Accused Products directly to retailers and carriers in the United States, such as Walmart, Best Buy, Target, Micro Center, Costco, and the like. For example, upon information and belief, Defendants further sell and offer to sell the Accused Products to their own subsidiaries and sister entities in the United States, such as to TCT Mobile and TCL North America.

36. For example, upon information and belief, Defendants sell and offer to sell the Accused Products in the United States, and track sales and growth of the Accused Products on a quarterly basis.

² <https://www.tcl.com/us/en/terms-privacy>

37. For example, TCL’s 2022 Annual Report describes the “principal activities” of Defendants as including, among other things, sale and distribution of its products, or otherwise describes share capital which are, upon information and belief, based on funds from the sale and distribution of those products. Upon information and belief, Defendants further sell, and offer to sell the Accused Products to customers in the United States through related intermediary entities, including those listed. TCL’s annual report also touts its partnership with the NFL in marketing televisions:



3

See also:

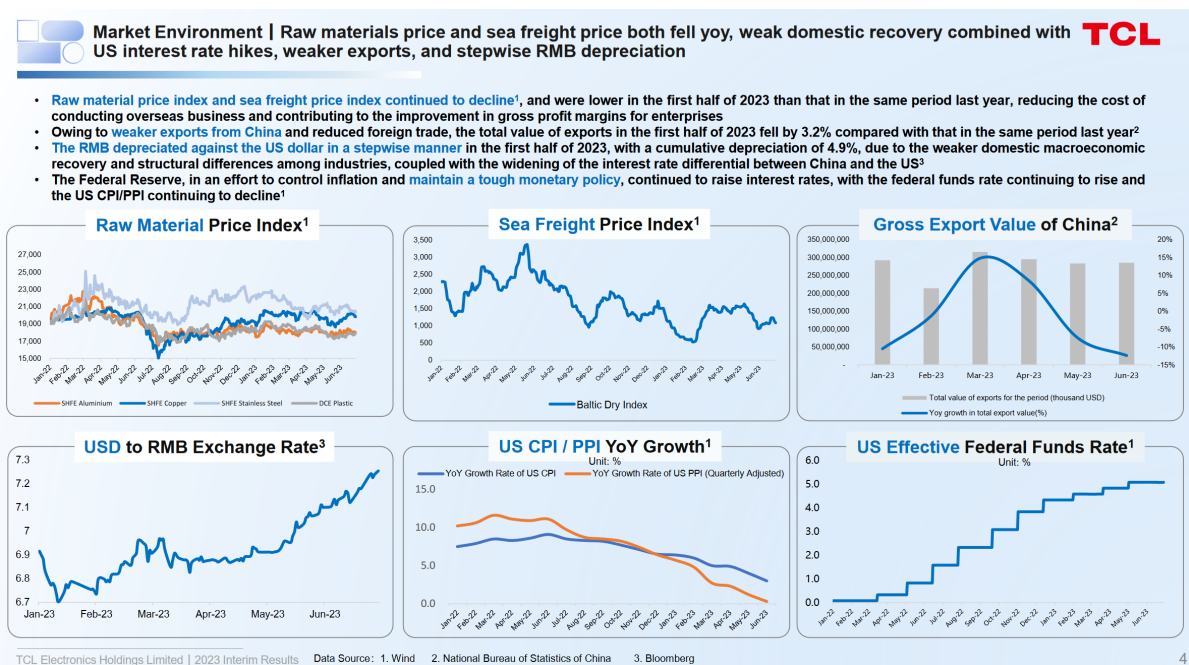
- North American Markets: in spite of the continuous weaker demand in the North American colour TV market due to the previous demand in advance impacted by the pandemic, the Group’s smart screen business in North America still made steady progress and maintained its leading market share in terms of retail sales volume in 2022. For the year ended 31 December 2022, market share of TCL smart screen in terms of retail sales volume ranked a solid No.2 in the U.S., No.4 in Mexico and No.5 in Canada (Source: NPD⁸);

4

³ TCL Electronics Holding Limited 2022 Annual Report at 7

⁴ *Id.* at 21.

38. For example, upon information and belief, Defendants import the Accused Products into the United States, including for at least the aforementioned sales, by paying for and arranging the shipment of the Accused Products into the United States, and specifying their destinations within the United States. For example, TCL's 2023 interim financial statement discusses sea freight costs in detail, and further details the impact of US Federal Reserve fund rates on its US CPI/PPI growth:



39. For example, upon information and belief, Defendants use the Accused Products in the United States for demonstration, marketing, and to create tutorials and instructions, inducing those based on which end-users and other buyers are induced to infringe. For example, TCL regularly attends the CES conference where it demonstrates and markets its products including, upon information and belief, the accused Televisions.⁶

⁵ <https://doc.irasia.com/listco/hk/tclelectronics/cpresent/pre230825.pdf> at 4

⁶ See e.g. <https://www.tcl.com/ab/en/ces2021/index.html>

COUNT I
(Infringement of the '415 Patent)

40. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

41. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '415 Patent.

42. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '415 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '415 Patent including, but not limited to, at least the Accused Products.

43. Defendants have directly infringed and continue to directly infringe the '415 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '415 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '415 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the 3-Series 40S325 infringes at least claim 1 of the '415 Patent.

44. For example, Defendants have and continue to directly infringe at least claim 1 of the '415 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light source apparatus comprising: at least one module substrate comprising connecting terminals at both side ends thereof; a light emitting diode on the module substrate; and a plurality of connecting substrates connected to the connecting terminals of the module substrate, wherein the connecting substrate comprises a termination connecting substrate,

by which the connecting terminal provided at one end of a final module substrate of the module substrates is prepared as a closed loop circuit.

45. The Accused Products comprise at least one module substrate comprising connecting terminals at both side ends thereof. For example, upon information and belief, the 40S325 comprises rows of module substrates (*e.g.*, LED strips) comprising connecting terminals at both side ends thereof.

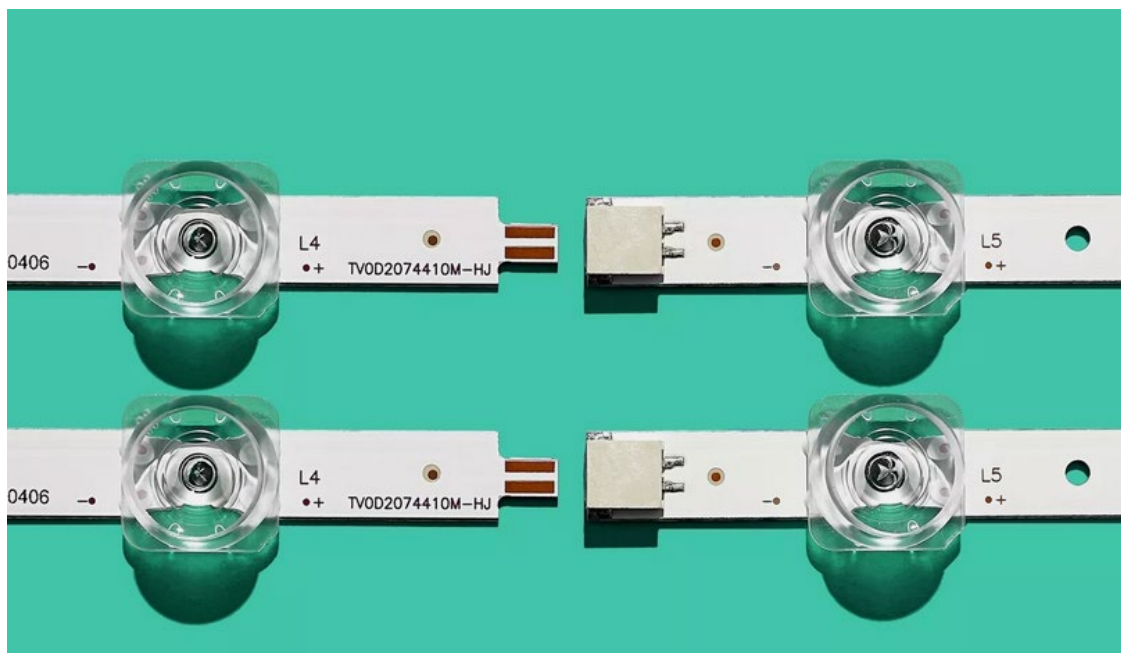


<https://www.shopjimmy.com/tcl-tcl-gic-40d6-2x10-3030-replacement-led-backlight-strips-2/#mz-expanded-view-512975756794>

46. The Accused Products comprise a light emitting diode on the module substrate. For example, each LED strip comprises a plurality of light emitting diodes.

Id.

47. The Accused Products comprise a plurality of connecting substrates connected to the connecting terminals of the module substrate, wherein the connecting substrate comprises a termination connecting substrate, by which the connecting terminal provided at one end of a final module substrate of the module substrate is prepared as a closed loop circuit. For example, the Accused Products comprise a plurality of connecting substrates connected to the connecting terminals at the end of the module substrate (*e.g.*, chained LED strips), by which, upon information and belief, the connecting terminal provided at one end of a final module substrate is prepared as a closed loop circuit, *e.g.*, within each row of LED strips. *See e.g.*:



<https://www.ebay.com/itm/155774152160>

48. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '415 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '415 Patent. Defendants perform these affirmative

acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '415 Patent, but while remaining willfully blind to the infringement.

49. Defendants have indirectly infringed and continues to indirectly infringe one or more claims of the '415 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '415 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '415 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '415 Patent. Defendants perform these affirmative acts with knowledge of the '415 Patent and with intent, or willful blindness, that they cause the direct infringement of the '415 Patent.

50. Defendants have willfully infringed, and continue to willfully infringe, the '415 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '415 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou Legin Semiconductor.⁷

⁷ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

51. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '415 Patent in an amount to be proved at trial.

52. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '415 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT II
(Infringement of the '380 Patent)

53. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

54. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '380 Patent.

55. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '380 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '380 Patent including, but not limited to, at least the Accused Products.

56. Defendants have directly infringed and continue to directly infringe the '380 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '380 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '380 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the 4-Series 55S401 infringes at least claim 1 of the '380 Patent.

57. For example, Defendants have and continue to directly infringe at least claim 1 of the '380 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light unit comprising: a light guide member outputting surface light upward; a board disposed to a first side of the light guide member; a plurality of light-emitting devices mounted on a first side of the board; a reflection sheet under the light guide member; a housing receiving the light guide member, the light-emitting devices, the board, and the reflection sheet; and a metal plate attached to a second side of the board and a first side of the housing, wherein the second side of the board is opposite to the first side of the board, wherein a lower side of the metal plate is contacted with a bottom surface of the housing, wherein the board is a flexible PCB that includes a first portion disposed between the metal plate and the first side of the light guide member, and a second portion disposed between the reflection sheet and the housing, and wherein the second portion of the board includes line patterns connected to the light-emitting devices.

58. The Accused Products comprise a light guide member outputting surface light upward, such as an optic mounted over an LED of an LED strip.



<https://www.youtube.com/watch?v=KaKi5aC9fUQ> at 2:40

59. The Accused Products comprise a board disposed to a first side of the light guide member, such as an LED strip.

60. The Accused Products comprise a plurality of light-emitting devices mounted on a first side of the board, *e.g.*, LEDs mounted on a first side of the LED strip.



Id. at 3:24.

61. The Accused Products comprise a reflection sheet under the light guide member, *e.g.*, a white reflective sheet under the optics of the 55S401.

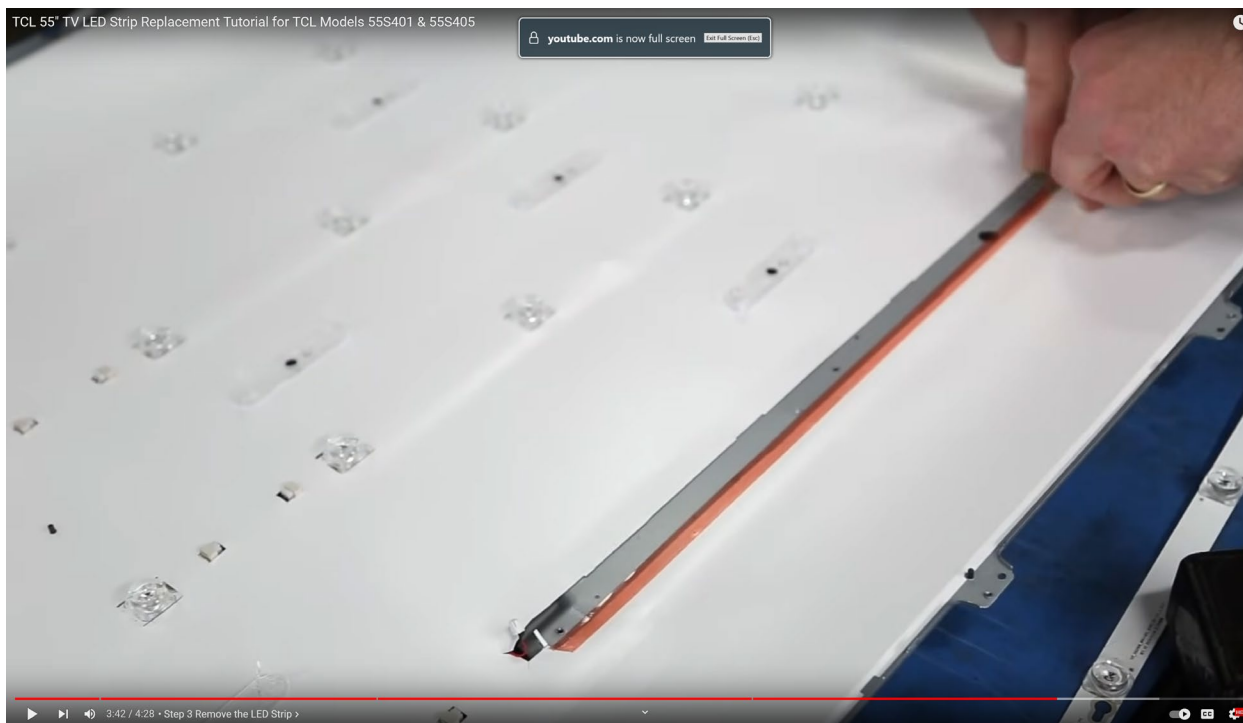
62. The Accused Products comprise a housing receiving the light guide member, the light-emitting devices, the board, and the reflection sheet, *e.g.*, the plastic outer housing of the 55S401.

63. The Accused Products comprise a housing receiving the light guide member, the light-emitting devices, the board, and the reflection sheet, *e.g.*, the metal housing of the 55S401.



<https://www.tcl.com/us/en/products/home-theater/4-series/tcl-55-class-4-series-4k-uhd-hdr-roku-smart-tv-55s401>

64. The Accused Products comprise a metal plate attached to a second side of the board and a first side of the housing, *e.g.*, a metal plate between the LED strip and outer plastic housing of the 55S401.



<https://www.youtube.com/watch?v=KaKi5aC9fUQ> at 3:42

65. The Accused Products comprise an apparatus wherein the second side of the board is opposite to the first side of the board, *e.g.*, wherein the lower side of the LED strip attached to the metal plate is opposite the upper side of the LED strip on which the LEDs are mounted.

66. The Accused Products comprise an apparatus wherein a lower side of the metal plate is contacted with a bottom surface of the housing, *e.g.*, a lower side of the metal plate beneath the LED strip of the 55S401 is in contact with the bottom surface of the housing (*e.g.*, a lower surface of the plastic housing of the television).

67. The Accused Products comprise an apparatus wherein the board is a flexible PCB that includes a first portion disposed between the metal plate and the first side of the light guide member, and a second portion disposed between the reflection sheet and the housing. For example, the LED strips of the 55S401 are flexible PCBs that include a first portion disposed between the metal plate and the optic, and a second portion disposed between the metal plate and the reflection

sheet.



<https://www.youtube.com/watch?v=KaKi5aC9fUQ> at 2:40

68. The Accused Products comprise an apparatus wherein the second portion of the board includes line patterns connected to the light-emitting devices. For example, the LED strips of the 55S401 include line patterns connected to the LEDs as shown in the above-cited videos. *See also* <https://www.shopjimmy.com/tcl-4c-lb5504-yh-4c-lb5505-yh-led-backlight-strips-8/#mz-expanded-view-1253905501416>.

69. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '380 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such

as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '380 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '380 Patent, but while remaining willfully blind to the infringement.

70. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '380 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '380 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '380 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '380 Patent. Defendants perform these affirmative acts with knowledge of the '380 Patent and with intent, or willful blindness, that they cause the direct infringement of the '380 Patent.

71. Defendants have willfully infringed, and continue to willfully infringe, the '380 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '380 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.⁸

72. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '380 Patent in an amount to be proved at trial.

73. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '380 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT III
(Infringement of the '200 Patent)

74. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

75. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '200 Patent.

76. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '200 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '200 Patent including, but not limited to, at least the Accused Products.

77. Defendants have directly infringed and continue to directly infringe the '200 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products

⁸ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

that satisfy each and every limitation of one or more claims of the '200 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '200 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '200 Patent.

78. For example, Defendants have and continue to directly infringe at least claim 1 of the '200 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a lighting module comprising: a substrate; a plurality of light emitting diodes on a first surface of the substrate; and at least one guide protrusion on the first surface of the substrate, wherein the at least one guide protrusion comprises a pin protruding from the first surface of the substrate and a cap coupled to the pin, and the pin has a height less than a height of the light emitting diodes.

79. The Accused Products comprise a substrate, such as an LED strip.



<https://www.youtube.com/watch?v=TPsJpG2Ho8E> at 40:24

80. The Accused Products comprise a plurality of light emitting diodes on a first surface of the substrate, *e.g.*, a plurality of LEDs on a top surface of the LED strip, as shown above.

81. The Accused Products comprise at least one guide protrusion on the first surface of the substrate, *e.g.*, the guide protrusions visible beneath the optics of the LED strips of the 55US57.



<https://www.ebay.com/p/2174676342>

82. The Accused Products comprise an apparatus wherein the at least one guide protrusion comprises a pin protruding from the first surface of the substrate and a cap coupled to the pin, and the pin has a height less than a height of the light emitting diodes. For example, upon information and belief, the guide protrusions beneath the optics of the LED strips in the 55US57 comprise a cap coupled to a pin (e.g., a cap made of glue), and have a height less than the height of the LEDs of the strip.

83. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '200 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '200 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '200 Patent, but while remaining willfully blind to the infringement.

84. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '200 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '200 Patent is directly infringed by others. The accused components within the Accused

Products are material to the invention of the '200 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '200 Patent. Defendants perform these affirmative acts with knowledge of the '200 Patent and with intent, or willful blindness, that they cause the direct infringement of the '200 Patent.

85. Defendants have willfully infringed, and continue to willfully infringe, the '200 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '200 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.⁹

86. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '200 Patent in an amount to be proved at trial.

87. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '200 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT IV
(Infringement of the '091 Patent)

88. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

89. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '091 Patent.

90. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '091 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or

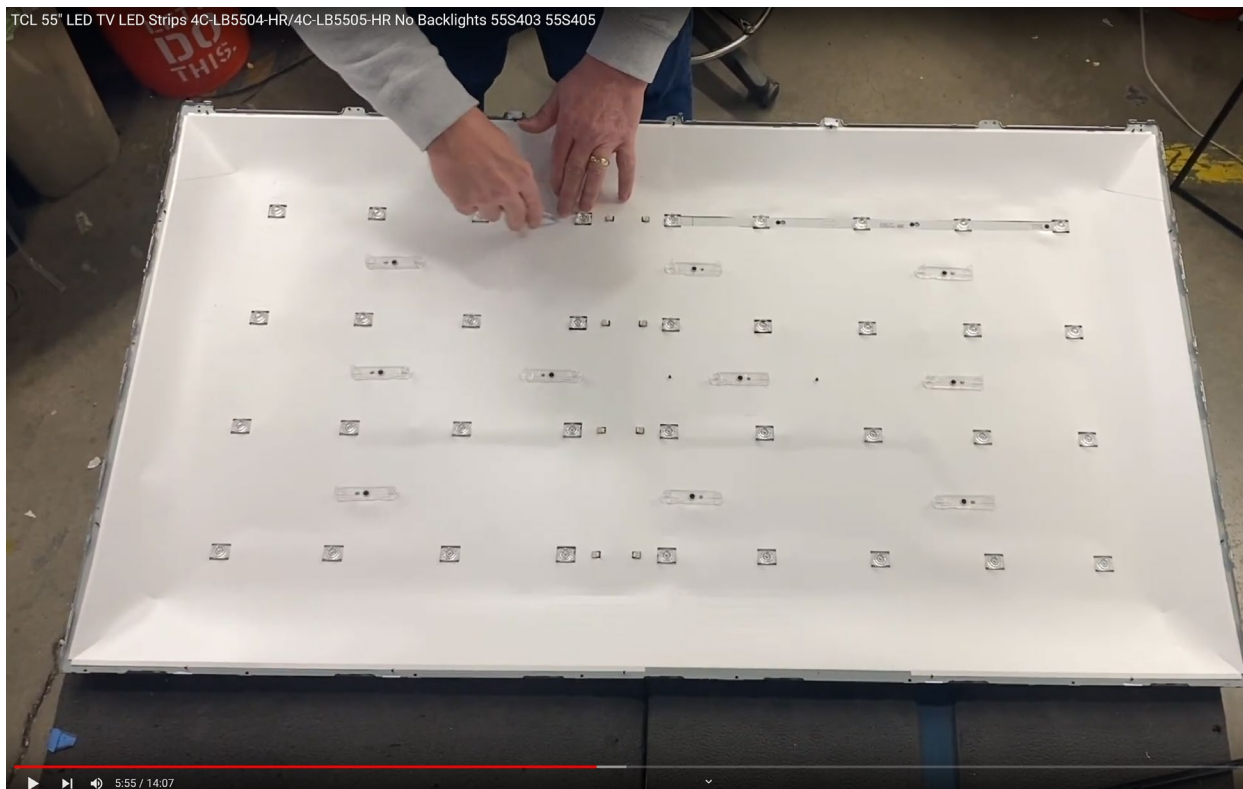
⁹ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

importing into the United States products and/or methods covered by one or more claims of the '091 Patent including, but not limited to, at least the Accused Products.

91. Defendants have directly infringed and continue to directly infringe the '091 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '091 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '091 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the 4-Series 55S403 infringes at least claim 1 of the '091 Patent.

92. For example, Defendants have and continue to directly infringe at least claim 1 of the '091 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a backlight unit comprising: an LED module comprising an LED; a case supporting the LED module; a fixing part fixing the LED module to the case; a reflective sheet comprising an opening for exposing the LED on the LED module; and a guide pin fixing the reflective sheet to the case, wherein the reflective sheet comprises a recess such that a protrusion of the fixing part is accommodated to the recess.

93. The Accused Products comprise an LED module comprising an LED, *e.g.*, LED strips comprising LEDs.

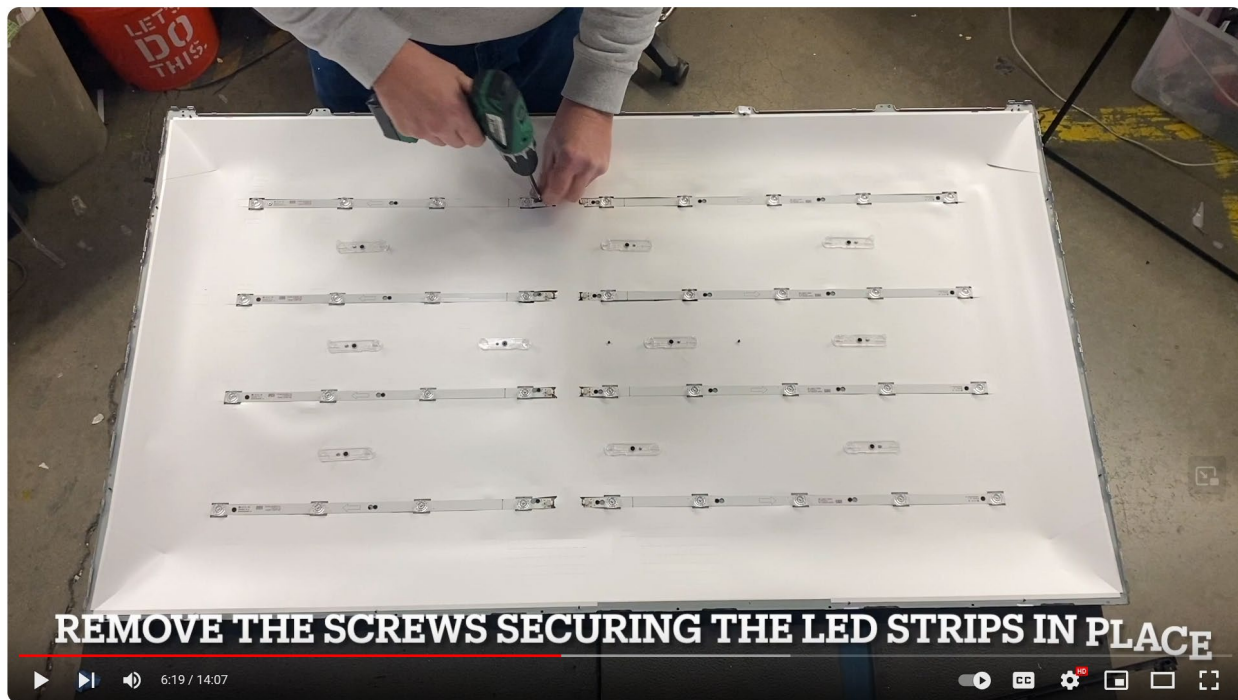


<https://www.youtube.com/watch?v=WnaY-KPYF0g> at 5:55

94. The Accused Products comprise a case supporting the LED module, *e.g.*, an assembly of housing and metal plate to which the LED strips are attached.

Id.

95. The Accused Products comprise a fixing part fixing the LED module to the case, *e.g.*, screws and/or tabs fixing the LED strips to the case:



<https://www.youtube.com/watch?v=WnaY-KPYF0g> at 6:19

96. The Accused Products comprise a reflective sheet comprising an opening for exposing the LED on the LED module, *e.g.*, a white reflective sheet with openings exposing the LEDs and optics of the LED strips as shown above.

97. The Accused Products comprise a guide pin fixing the reflective sheet to the case, *e.g.*, transparent guide pins and/or standoffs fixing the white reflective sheet to the case. *Id.*

98. The Accused Products comprise an apparatus wherein the reflective sheet comprises a recess such that a protrusion of the fixing part is accommodated to the recess. For example, the reflective sheet includes holes such that a protrusion of the transparent guide pins and standoffs are accommodated. *Id.*

99. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '091 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and

elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '091 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '091 Patent, but while remaining willfully blind to the infringement.

100. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '091 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '091 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '091 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '091 Patent. Defendants perform these

affirmative acts with knowledge of the '091 Patent and with intent, or willful blindness, that they cause the direct infringement of the '091 Patent.

101. Defendants have willfully infringed, and continue to willfully infringe, the '091 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '091 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁰

102. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '091 Patent in an amount to be proved at trial.

103. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '091 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT V
(Infringement of the '122 Patent)

104. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

105. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '122 Patent.

106. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '122 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '122 Patent including, but not limited to, at least the Accused Products.

¹⁰ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

107. Defendants have directly infringed and continue to directly infringe the '122 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '122 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '122 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the 4-Series 65S405 infringes at least claim 1 of the '122 Patent.

108. For example, Defendants have and continue to directly infringe at least claim 1 of the '122 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light emitting apparatus comprising: a substrate; a light emitting device package on the substrate; and a lens supported by the substrate, the lens being disposed on the light emitting device package, wherein the lens comprises a lens body having a first recess at a central portion of a top surface thereof, a second recess at a central portion of a bottom surface thereof, and a lens support disposed on the bottom surface of the lens body to support the lens body such that the bottom surface of the lens body is spaced apart from the substrate.

109. The Accused Products comprise a substrate such as an LED strip.



<https://www.youtube.com/watch?v=xyzxfakaP0o> at 34:31

110. The Accused Products comprise a light emitting device package on the substrate, *e.g.*, LED packages on the LED strips of the 65S405.

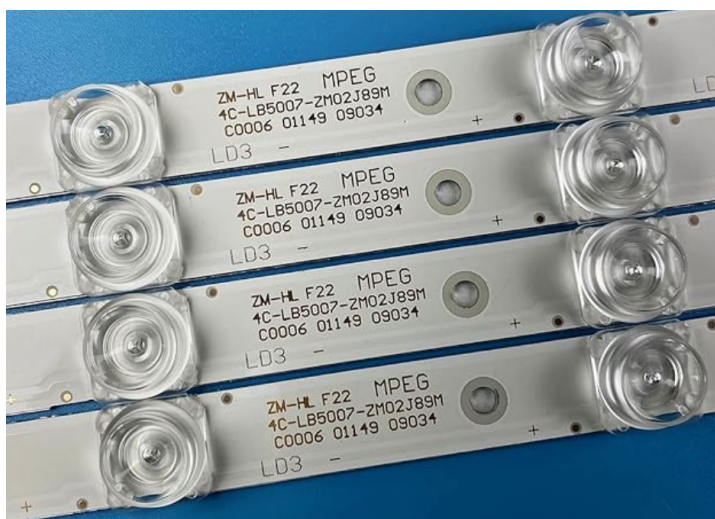
111. The Accused Products comprise a lens supported by the substrate, the lens being disposed on the light emitting device package, *e.g.*, optics disposed over the LED packages of the LED strips, as shown above.

112. The Accused Products comprise an apparatus wherein the lens comprises a lens body having a first recess at a central portion of a top surface thereof, a second recess at a central portion of a bottom surface thereof, and a lens support disposed on the bottom surface of the lens body to support the lens body such that the bottom surface of the lens body is spaced apart from

the substrate:



https://www.amazon.com/PANMILED-JL-D580A1330-365AS-M_V02-H58AE6100UK-HD580S1U02-HD580S1U91/dp/B0B3HYPV6J



Id.

113. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '122 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell,

selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '122 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '122 Patent, but while remaining willfully blind to the infringement.

114. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '122 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '122 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '122 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '122 Patent. Defendants perform these affirmative acts with knowledge of the '122 Patent and with intent, or willful blindness, that they cause the direct infringement of the '122 Patent.

115. Defendants have willfully infringed, and continue to willfully infringe, the '122 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '122 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹¹

116. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '122 Patent in an amount to be proved at trial.

117. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '122 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT VI
(Infringement of the '307 Patent)

118. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

119. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '307 Patent.

120. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '307 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '307 Patent including, but not limited to, at least the Accused Products.

121. Defendants have directly infringed and continue to directly infringe the '307 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products

¹¹ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

that satisfy each and every limitation of one or more claims of the '307 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '307 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the 4-Series 65S405 infringes at least claim 1 of the '307 Patent.

122. For example, Defendants have and continue to directly infringe at least claim 1 of the '307 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light emitting apparatus, comprising: a substrate; a light emitting device package on the substrate, the light emitting device package comprising: a package body provided on the substrate; at least one light emitting device provided on the package body; a phosphor layer surrounding the light emitting device; and a sealing resin layer provided on the phosphor layer and the package body; and a lens supported by the substrate, the lens being disposed on the light emitting device package, wherein the lens comprises a lens body having a first recess at a central portion of a top surface thereof, a second recess at a central portion of a bottom surface thereof, and a lens support disposed on the bottom surface of the lens body to support the lens body such that the bottom surface of the lens body is spaced apart from the substrate.

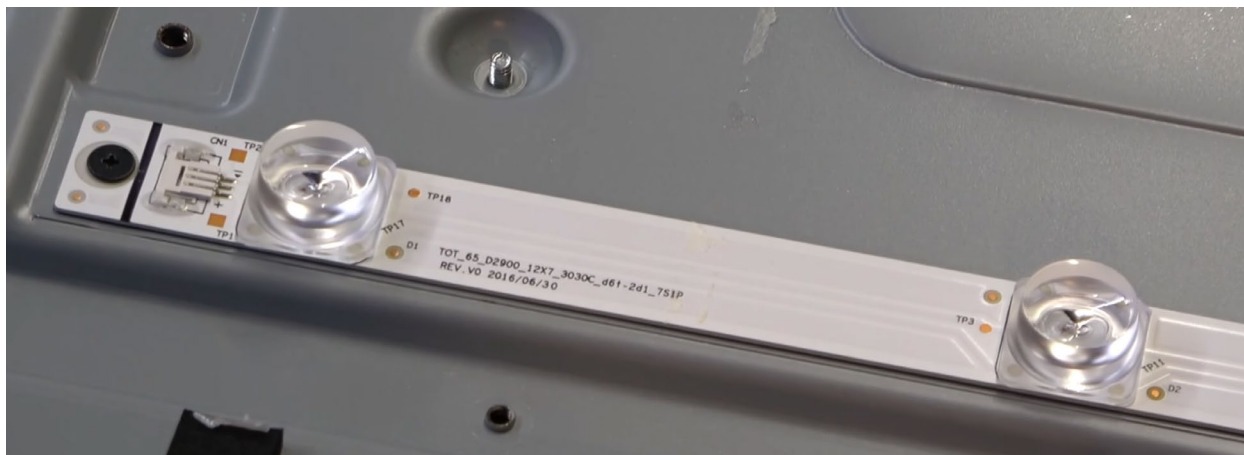
123. The Accused Products comprise a substrate such as an LED strip.



<https://www.youtube.com/watch?v=xyzxfakaP0o> at 34:31

124. The Accused Products comprise a light emitting device package on the substrate, *e.g.*, LED packages on the LED strips of the 65S405.

125. The Accused Products comprise a light emitting device package comprising: a package body provided on the substrate; at least one light emitting device provided on the package body; a phosphor layer surrounding the light emitting device; and a sealing resin layer provided on the phosphor layer and the package body. For example, the LED strips of the 65S405 comprise a plurality of an LED packages which each comprise, upon information and belief, a package body on the substrate, and LED, a phosphor layer surrounding the LED (*e.g.*, the yellow phosphor layer of each LED), and a sealing resin layer on the phosphor and package body.

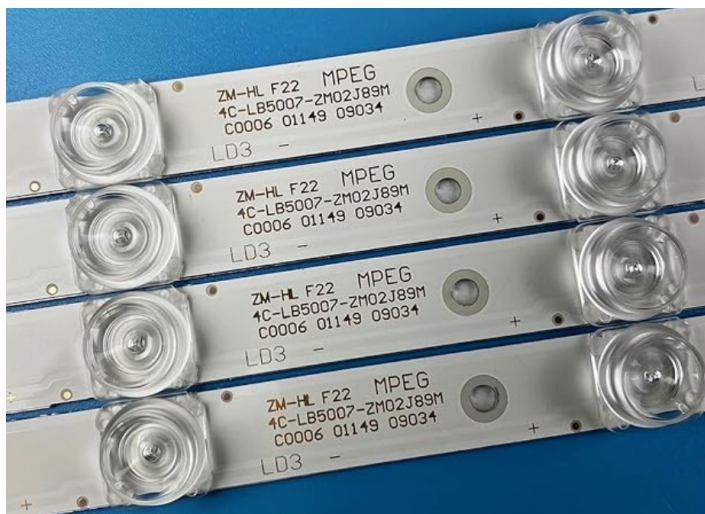


<https://www.youtube.com/watch?v=xyzxfakaP0o> at 36:24

126. The Accused Products comprise a lens supported by the substrate, the lens being disposed on the light emitting device package, wherein the lens comprises a lens body having a first recess at a central portion of a top surface thereof, a second recess at a central portion of a bottom surface thereof, and a lens support disposed on the bottom surface of the lens body to support the lens body such that the bottom surface of the lens body is spaced apart from the substrate:



https://www.amazon.com/PANMILED-JL-D580A1330-365AS-M_V02-H58AE6100UK-HD580S1U02-HD580S1U91/dp/B0B3HYPV6J



Id.

127. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '307 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '307 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there

was a high probability that others, including end-users, infringe the '307 Patent, but while remaining willfully blind to the infringement.

128. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '307 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '307 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '307 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '307 Patent. Defendants perform these affirmative acts with knowledge of the '307 Patent and with intent, or willful blindness, that they cause the direct infringement of the '307 Patent.

129. Defendants have willfully infringed, and continue to willfully infringe, the '307 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '307 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹²

130. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '307 Patent in an amount to be proved at trial.

¹² See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

131. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '307 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT VII
(Infringement of the '729 Patent)

132. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

133. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '729 Patent.

134. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '729 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '729 Patent, including, but not limited to, at least the Accused Products.

135. Defendants have directly infringed and continue to directly infringe the '729 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '729 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '729 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '729 Patent.

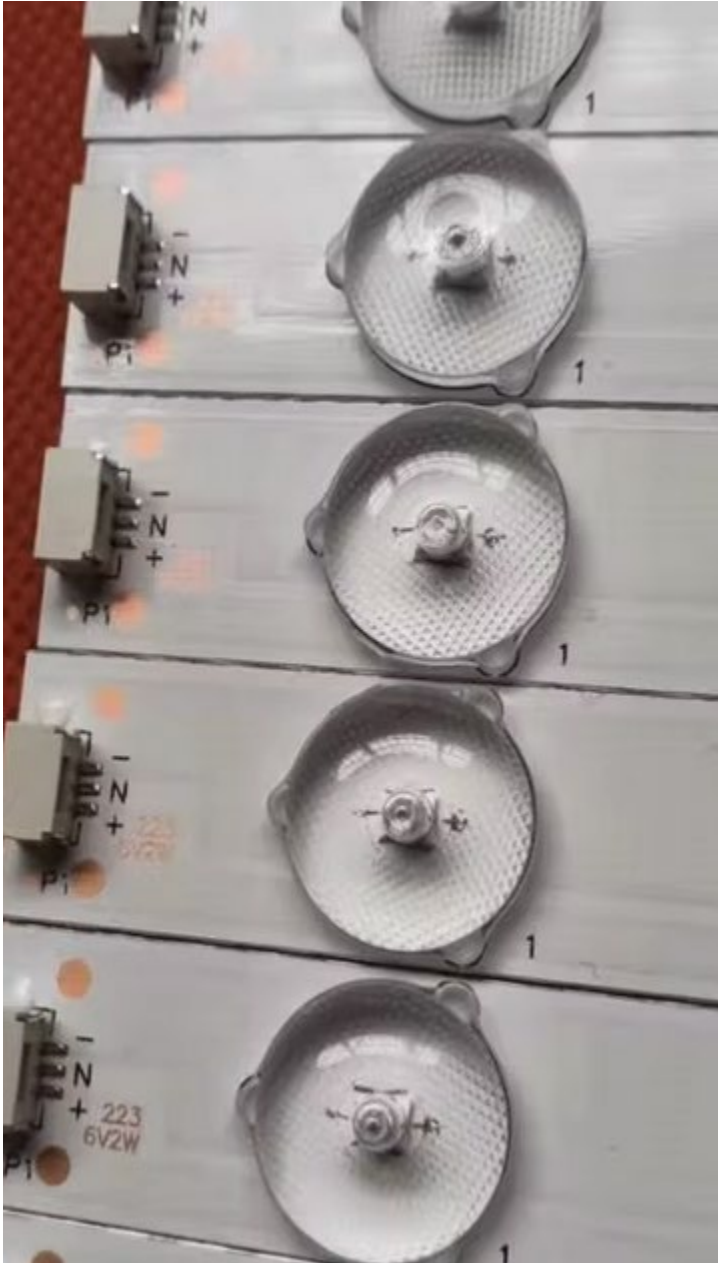
136. For example, Defendants have and continue to directly infringe at least claim 1 of the '729 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a lens comprising: a lens body having a convex top surface comprising a

first recessed part at a central portion thereof and a flat surface at a circumference thereof and a flat bottom surface comprising a second recessed part at a central portion thereof; and a plurality of lens supports on the bottom surface of the lens body, wherein a ratio of a maximum depth (a) of the first recessed part, from the top surface of the lens body to a bottom surface of the first recessed part, to a maximum thickness (h) of the lens body, from the top surface of the lens body to the bottom surface of the lens body, ranges from about 0.06 to about 0.1.

137. The Accused Products comprise a lens body having a convex top surface comprising a first recessed part at a central portion thereof and a flat surface at a circumference thereof and a flat bottom surface comprising a second recessed part at a central portion thereof. For example, the 55US57 comprises 006-P1K3465A LED strips, which comprise lenses having a lens body having a convex top surface comprising a first recessed part at a central portion thereof and a flat surface at a circumference thereof and a flat bottom surface comprising a second recessed part at a central portion thereof:



<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27; *see also* <https://www.shopjimmy.com/tcl-006-p1k3465a-55d2700-led-backlight-strips-8-55us5800-55us57-new/>.



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

138. The Accused Products comprise a plurality of lens supports on the bottom surface of the lens body. For example, upon information and belief, the bottom of the optics of the LED

strips include at least three legs on the bottom surface of the lens body. *Id.*

139. The Accused Products comprise an apparatus wherein a ratio of a maximum depth (a) of the first recessed part, from the top surface of the lens body to a bottom surface of the first recessed part, to a maximum thickness (h) of the lens body, from the top surface of the lens body to the bottom surface of the lens body, ranges from about 0.06 to about 0.1. For example, upon information and belief, the lens of the 55US57, as shown below, has a ratio of a maximum depth (a) of the first recessed part, from the top surface of the lens body to a bottom surface of the first recessed part, to a maximum thickness (h) of the lens body, from the top surface of the lens body to the bottom surface of the lens body, ranges from about 0.06 to about 0.1

140. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '729 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '729 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there

was a high probability that others, including end-users, infringe the '729 Patent, but while remaining willfully blind to the infringement.

141. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '729 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '729 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '729 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '729 Patent. Defendants perform these affirmative acts with knowledge of the '729 Patent and with intent, or willful blindness, that they cause the direct infringement of the '729 Patent.

142. Defendants have willfully infringed, and continue to willfully infringe, the '729 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '729 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹³

143. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '729 Patent in an amount to be proved at trial.

¹³ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

144. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '729 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT VIII
(Infringement of the '307 Patent)

145. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

146. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '307 Patent.

147. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '307 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '307 Patent including, but not limited to, at least the Accused Products.

148. Defendants have directly infringed and continue to directly infringe the '307 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '307 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '307 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '307 Patent.

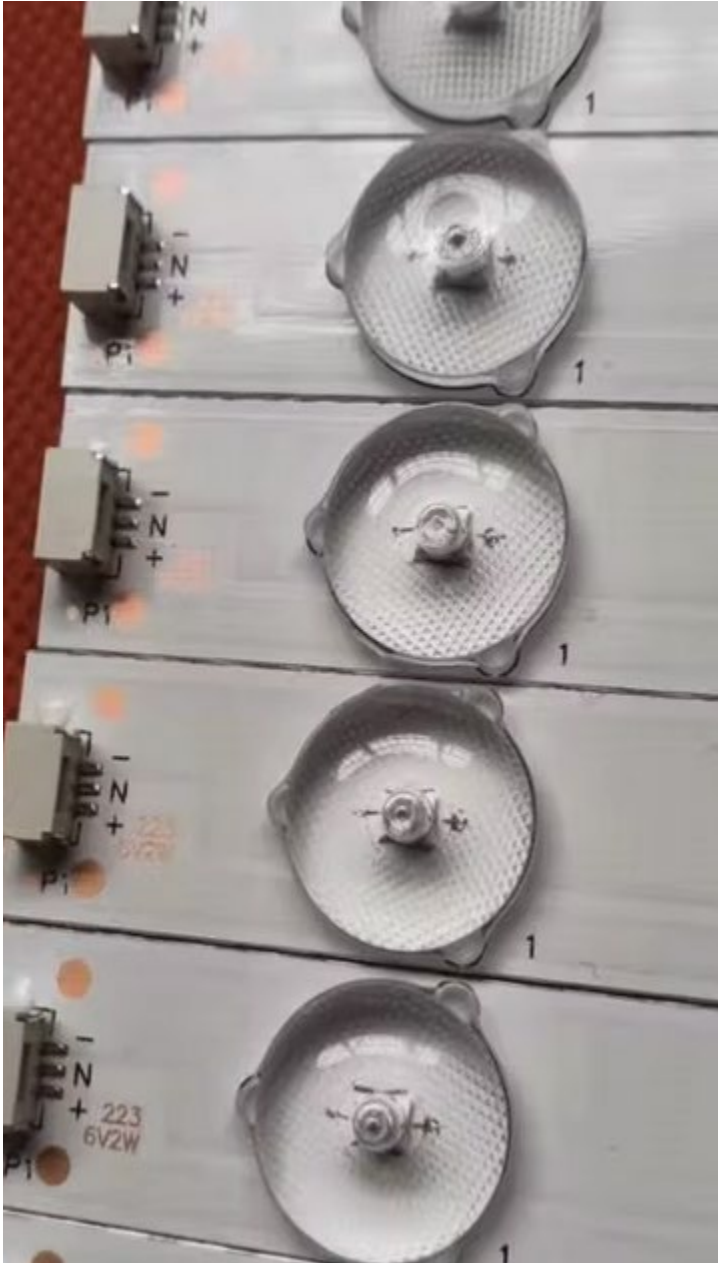
149. For example, Defendants have and continue to directly infringe at least claim 1 of the '307 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a lens, comprising: a lens body having a convex top surface comprising a

first recessed part at a central portion thereof and a flat surface at a circumference thereof and a flat bottom surface comprising a second recessed part at a central portion thereof; and a plurality of lens supports on the bottom surface of the lens body, wherein a ratio of a maximum depth of the first recessed part to a maximum thickness of the lens body ranges from about 0.06 to about 0.1, a ratio of a maximum depth of the second recessed part to the maximum thickness of the lens body ranges from about 0.5 to 0.75, and a ratio of the maximum depth of the second recessed part to the maximum depth of the first recessed part ranges from about 6.25 to about 10, and a ratio of a maximum width of the first recessed part to a maximum width of the lens body ranges from about 0.18 to about 0.3, a ratio of a maximum width of the second recessed part to the maximum width of the lens body ranges from about 0.14 to about 0.25, and a ratio of the maximum width of the second recessed part to the maximum width of the first recessed part ranges from about 0.7 to about 0.94.

150. The Accused Products comprise a lens body having a convex top surface comprising a first recessed part at a central portion thereof and a flat surface at a circumference thereof and a flat bottom surface comprising a second recessed part at a central portion thereof:



<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27; *see also*
<https://www.shopjimmy.com/tcl-006-p1k3465a-55d2700-led-backlight-strips-8-55us5800-55us57-new/>



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

151. The Accused Products comprise a plurality of lens supports on the bottom surface of the lens body. For example, upon information and belief, the bottom of the optics of the LED

strips include at least three legs on the bottom surface of the lens body. *Id.*

152. The Accused Products comprise an apparatus wherein a ratio of a maximum depth of the first recessed part to a maximum thickness of the lens body ranges from about 0.06 to about 0.1, a ratio of a maximum depth of the second recessed part to the maximum thickness of the lens body ranges from about 0.5 to 0.75, and a ratio of the maximum depth of the second recessed part to the maximum depth of the first recessed part ranges from about 6.25 to about 10. For example, upon information and belief, the lens of the 55US57, as shown below, has a ratio of a maximum depth of the first recessed part to a maximum thickness of the lens body ranges from about 0.06 to about 0.1, a ratio of a maximum depth of the second recessed part to the maximum thickness of the lens body ranges from about 0.5 to 0.75, and a ratio of the maximum depth of the second recessed part to the maximum depth of the first recessed part ranges from about 6.25 to about 10, as shown above.

153. The Accused Products comprise an apparatus wherein a ratio of a maximum width of the first recessed part to a maximum width of the lens body ranges from about 0.18 to about 0.3, a ratio of a maximum width of the second recessed part to the maximum width of the lens body ranges from about 0.14 to about 0.25, and a ratio of the maximum width of the second recessed part to the maximum width of the first recessed part ranges from about 0.7 to about 0.94. For example, upon information and belief, the lens of the 55US57 as shown above has a ratio of a maximum width of the first recessed part to a maximum width of the lens body ranges from about 0.18 to about 0.3, a ratio of a maximum width of the second recessed part to the maximum width of the lens body ranges from about 0.14 to about 0.25, and a ratio of the maximum width of the second recessed part to the maximum width of the first recessed part ranges from about 0.7 to about 0.94.

154. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '307 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '307 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '307 Patent, but while remaining willfully blind to the infringement.

155. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '307 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '307 Patent is directly infringed by others. The accused components within the Accused

Products are material to the invention of the '307 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '307 Patent. Defendants perform these affirmative acts with knowledge of the '307 Patent and with intent, or willful blindness, that they cause the direct infringement of the '307 Patent.

156. Defendants have willfully infringed, and continue to willfully infringe, the '307 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '307 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁴

157. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '307 Patent in an amount to be proved at trial.

158. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '307 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT IX
(Infringement of the '744 Patent)

159. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

160. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '744 Patent.

161. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '744 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or

¹⁴ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

importing into the United States products and/or methods covered by one or more claims of the '744 Patent, including, but not limited to, at least the Accused Products.

162. Defendants have directly infringed and continue to directly infringe the '744 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '744 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '744 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '744 Patent.

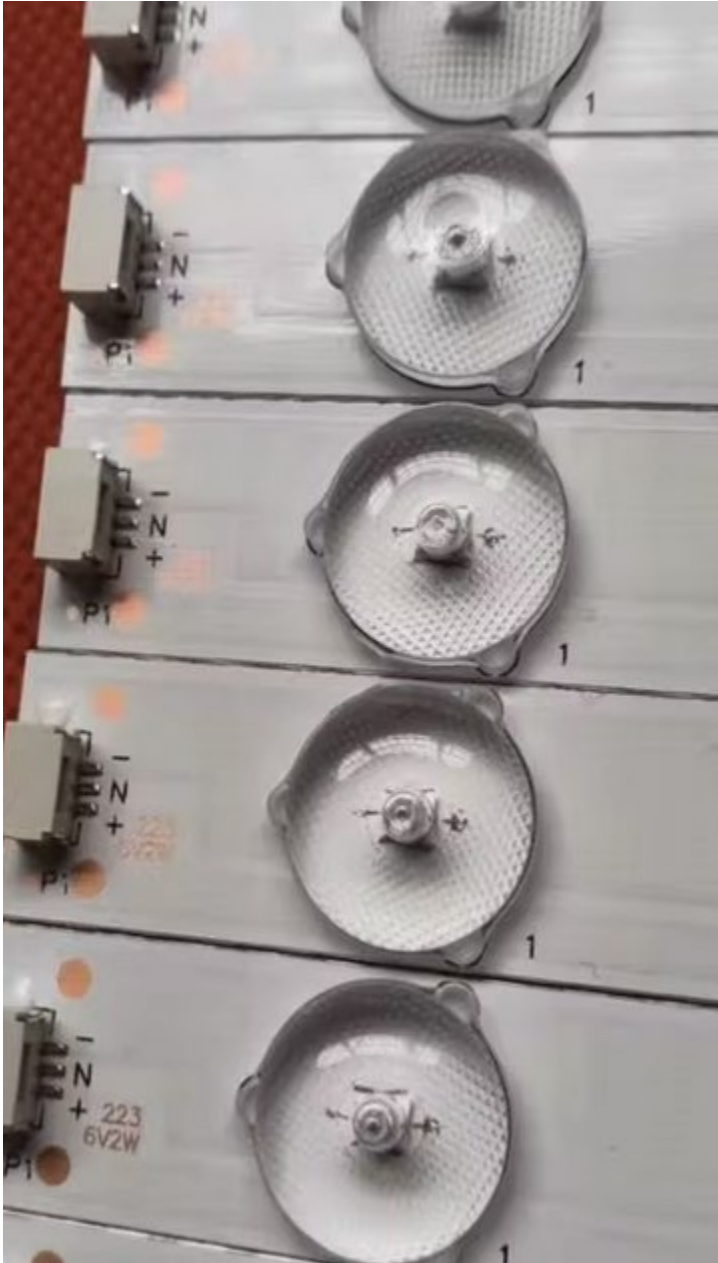
163. For example, Defendants have and continue to directly infringe at least claim 1 of the '744 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a lens comprising: a lens body having a convex top surface and a bottom surface, the convex top surface including a first recessed part at a central portion thereof and a flat top surface at a circumference of the top surface of the lens body, the bottom surface including a second recessed part at a central portion thereof, wherein the flat top surface is disposed lower than a lowest point of the first recessed part; and a plurality of lens supporters at the bottom surface of the lens body, wherein a maximum width (i) at a portion in which the convex top surface of the lens body is curved ranges from about 12 mm to about 18 mm, wherein a maximum width (j) of the lens body ranges from about 13 mm to about 19 mm, wherein a ratio of a maximum depth (b) of the second recessed part to a maximum thickness (h) of the lens body ranges from about 0.5 to about 0.75, and wherein a ratio of a maximum width (d) of the second recessed part to a maximum

width (j) of the lens body ranges from about 0.14 to about 0.25.

164. The Accused Products comprise a lens body having a convex top surface and a bottom surface, the convex top surface including a first recessed part at a central portion thereof and a flat top surface at a circumference of the top surface of the lens body, the bottom surface including a second recessed part at a central portion thereof, wherein the flat top surface is disposed lower than a lowest point of the first recessed part:



<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27; *see also* <https://www.shopjimmy.com/tcl-006-p1k3465a-55d2700-led-backlight-strips-8-55us5800-55us57-new/>



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

165. The Accused Products comprise a plurality of lens supports on the bottom surface of the lens body. For example, upon information and belief, the bottom of the optics of the LED

strips include at least three legs on the bottom surface of the lens body. *Id.*

166. The Accused Products comprise an apparatus wherein a maximum width (i) at a portion in which the convex top surface of the lens body is curved ranges from about 12 mm to about 18 mm, wherein a maximum width (j) of the lens body ranges from about 13 mm to about 19 mm, wherein a ratio of a maximum depth (b) of the second recessed part to a maximum thickness (h) of the lens body ranges from about 0.5 to about 0.75, and wherein a ratio of a maximum width (d) of the second recessed part to a maximum width (j) of the lens body ranges from about 0.14 to about 0.25. For example, upon information and belief, the lens of the 55US57, as shown below, has a maximum width (i) at a portion in which the convex top surface of the lens body is curved ranges from about 12 mm to about 18 mm, wherein a maximum width (j) of the lens body ranges from about 13 mm to about 19 mm, wherein a ratio of a maximum depth (b) of the second recessed part to a maximum thickness (h) of the lens body ranges from about 0.5 to about 0.75, and wherein a ratio of a maximum width (d) of the second recessed part to a maximum width (j) of the lens body ranges from about 0.14 to about 0.25, as shown above.

167. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '744 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users

suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '744 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '744 Patent, but while remaining willfully blind to the infringement.

168. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '744 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '744 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '744 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '744 Patent. Defendants perform these affirmative acts with knowledge of the '744 Patent and with intent, or willful blindness, that they cause the direct infringement of the '744 Patent.

169. Defendants have willfully infringed, and continue to willfully infringe, the '744 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '744 Patent, at

least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁵

170. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '744 Patent in an amount to be proved at trial.

171. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '744 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT X
(Infringement of the '048 Patent)

172. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

173. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '048 Patent.

174. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '048 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '048 Patent including, but not limited to, at least the Accused Products.

175. Defendants have directly infringed and continue to directly infringe the '048 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '048 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '048 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6,

¹⁵ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '048 Patent.

176. For example, Defendants have and continue to directly infringe at least claim 1 of the '048 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light emitting apparatus comprising: a substrate; a light emitting device on the substrate; and a lens on the light emitting device, wherein the lens includes a center portion, a peripheral portion surrounding the center portion and a side portion surrounding the peripheral portion and having an outer side surface, wherein the center portion of the lens has a first top surface with a first recess and a first bottom surface with a second recess, the first and second recesses opposite to each other, wherein the first recess has an inwardly-concave curvature shape, wherein the first recess has a width greater than that of the second recess, wherein a thickness of the outer side surface of the side portion is smaller than a depth of the second recess of the center portion, and wherein the peripheral portion of the lens has a second rounded-top surface extending from the first top surface to the side portion, and wherein the second rounded-top surface of the peripheral portion has a continuing surface between the center portion and the side portion.

177. The Accused Products comprise a substrate, such as an LED strip.

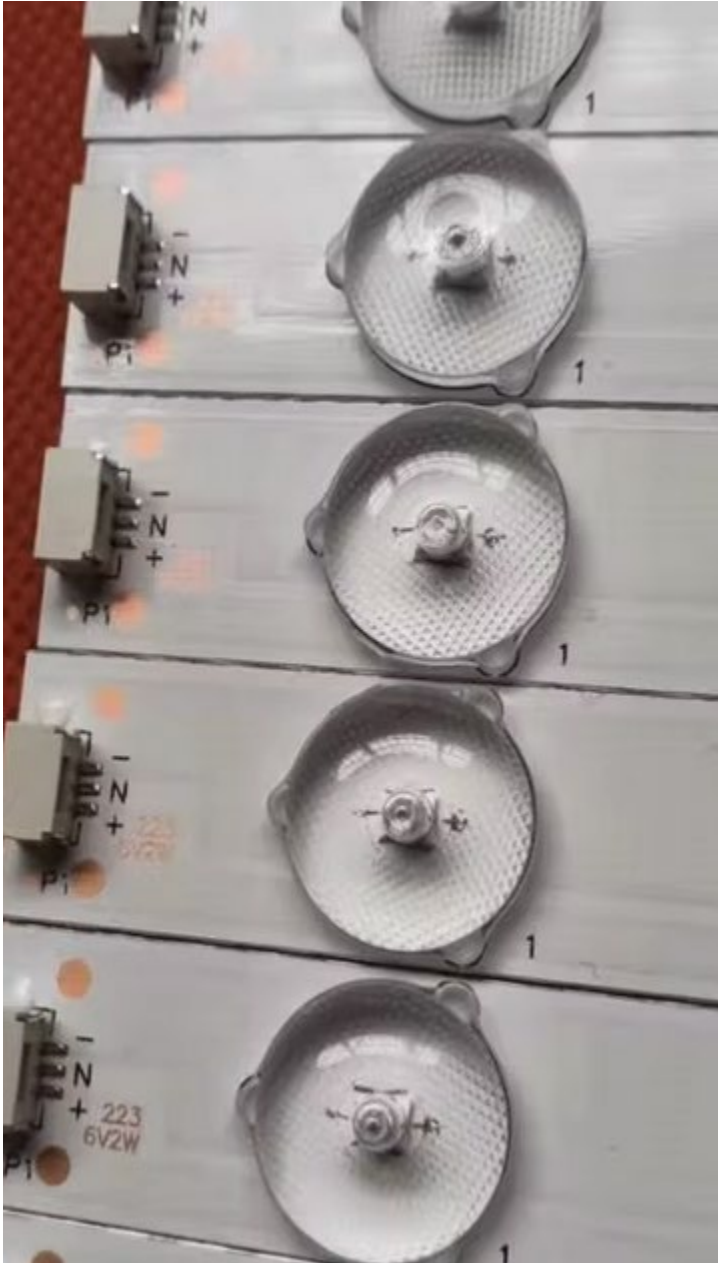
178. The Accused Products comprise a light emitting device on the substrate, such as an LED mounted on an LED strip.



<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27

179. The Accused Products comprise a lens on the light emitting device, *e.g.*, optics disposed over LEDs of the LED strips of an 55US57.

180. The Accused Products comprise an apparatus wherein the lens includes a center portion, a peripheral portion surrounding the center portion and a side portion surrounding the peripheral portion and having an outer side surface, as shown below for the 006-P1K3465A LED strips of an 55US57:



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

181. The Accused Products comprise an apparatus wherein the center portion of the lens has a first top surface with a first recess and a first bottom surface with a second recess, the first

and second recesses opposite to each other, as shown above for the 006-P1K3465A LED strips of an 55US57.

182. The Accused Products comprise an apparatus wherein the first recess has an inwardly-concave curvature shape, as shown above for the 006-P1K3465A LED strips of an 55US57.

183. The Accused Products comprise an apparatus wherein the first recess has a width greater than that of the second recess, as shown above for the 006-P1K3465A LED strips of an 55US57.

184. The Accused Products comprise an apparatus wherein a thickness of the outer side surface of the side portion is smaller than a depth of the second recess of the center portion, as shown above for the 006-P1K3465A LED strips of an 55US57.

185. The Accused Products comprise an apparatus wherein the peripheral portion of the lens has a second rounded-top surface extending from the first top surface to the side portion, as shown above for the 006-P1K3465A LED strips of an 55US57.

186. The Accused Products comprise an apparatus wherein the second rounded-top surface of the peripheral portion has a continuing surface between the center portion and the side portion, as shown above for the 006-P1K3465A LED strips of an 55US57.

187. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '048 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such

as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '048 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '048 Patent, but while remaining willfully blind to the infringement.

188. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '048 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '048 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '048 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '048 Patent. Defendants perform these affirmative acts with knowledge of the '048 Patent and with intent, or willful blindness, that they cause the direct infringement of the '048 Patent.

189. Defendants have willfully infringed, and continue to willfully infringe, the '048 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '048 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁶

190. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '048 Patent in an amount to be proved at trial.

191. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '048 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT XI
(Infringement of the '183 Patent)

192. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

193. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '183 Patent.

194. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '183 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '183 Patent including, but not limited to, at least the Accused Products.

195. Defendants have directly infringed and continue to directly infringe the '183 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C.

¹⁶ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

§ 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '183 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '183 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '183 Patent.

196. For example, Defendants have and continue to directly infringe at least claim 1 of the '183 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a light emitting apparatus comprising: a substrate; a light emitting device on the substrate; a fluorescent layer formed on the substrate and the light emitting device to surround the light emitting device; an encapsulant resin layer formed on the substrate and the fluorescent layer to surround the fluorescent layer; and a lens disposed on the light emitting device and supported by the substrate, wherein the lens includes a lens body having a downwardly concave first recess formed at a center of a top surface of the lens body and an upwardly concave second recess formed at a center of a bottom surface of the lens body, and at least one of lens supporters provided at the bottom surface of the lens body to support the lens body such that the lens body is spaced apart from the substrate, and wherein a thickness of the lens body between a bottom surface of the downwardly concave first recess and a top surface of the upwardly concave second recess increases from a center region of one of the downwardly concave first recess or the upwardly concave second recess to an end region thereof, wherein a ratio of a maximum depth of the first recess to a maximum depth of the second recess is about 6.25 to 10.

197. The Accused Products comprise a substrate, such as an LED strip.

198. The Accused Products comprise a light emitting device on the substrate, such as an LED mounted on an LED strip.

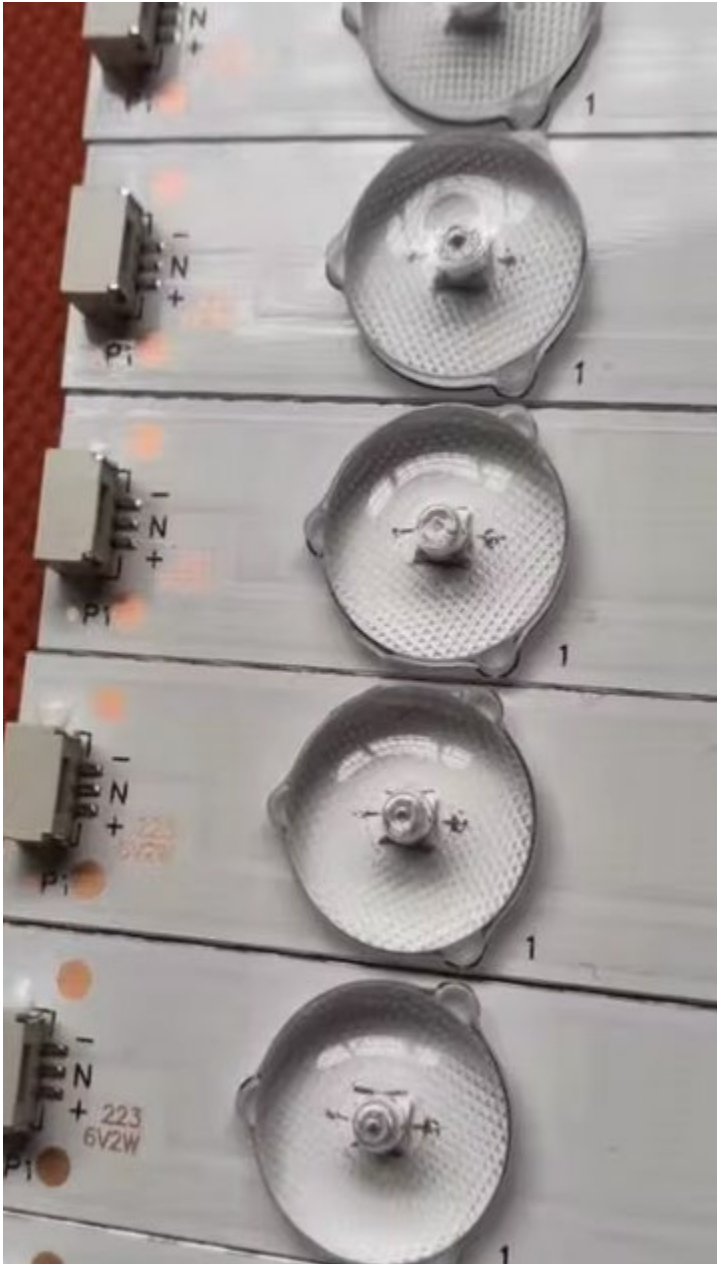


<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27

199. The Accused Products comprise a fluorescent layer formed on the substrate and the light emitting device to surround the light emitting device, *e.g.*, a phosphor layer for each LED on the LED strip.

200. The Accused Products comprise a fluorescent layer formed on the substrate and the light emitting device to surround the light emitting device. For example, upon information and belief, each LED package of the 006-P1K3465A LED strips of an 55US57 includes an encapsulant resin layer over a phosphor layer.

201. The Accused Products comprise a lens disposed on the light emitting device and supported by the substrate, *e.g.* a lens over an LED of an LED strip as shown above. *See also:*



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

202. The Accused Products comprise an apparatus wherein the lens includes a lens body having a downwardly concave first recess formed at a center of a top surface of the lens body and an upwardly concave second recess formed at a center of a bottom surface of the lens body, and at least one of lens supporters provided at the bottom surface of the lens body to support the lens body such that the lens body is spaced apart from the substrate, as shown above for the 006-P1K3465A LED strips of an 55US57.

203. The Accused Products comprise an apparatus wherein a thickness of the lens body between a bottom surface of the downwardly concave first recess and a top surface of the upwardly concave second recess increases from a center region of one of the downwardly concave first recess or the upwardly concave second recess to an end region thereof, as shown above for the 006-P1K3465A LED strips of an 55US57.

204. The Accused Products comprise an apparatus wherein a ratio of a maximum depth of the first recess to a maximum depth of the second recess is about 6.25 to 10, as shown above for the 006-P1K3465A LED strips of an 55US57.

205. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '183 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users

suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '183 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '183 Patent, but while remaining willfully blind to the infringement.

206. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '183 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '183 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '183 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '183 Patent. Defendants perform these affirmative acts with knowledge of the '183 Patent and with intent, or willful blindness, that they cause the direct infringement of the '183 Patent.

207. Defendants have willfully infringed, and continue to willfully infringe, the '183 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '183 Patent, at

least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁷

208. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '183 Patent in an amount to be proved at trial.

209. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '183 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT XII
(Infringement of the '378 Patent)

210. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

211. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '378 Patent.

212. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '378 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '378 Patent including, but not limited to, at least the Accused Products.

213. Defendants have directly infringed and continue to directly infringe the '378 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '378 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '378 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6,

¹⁷ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

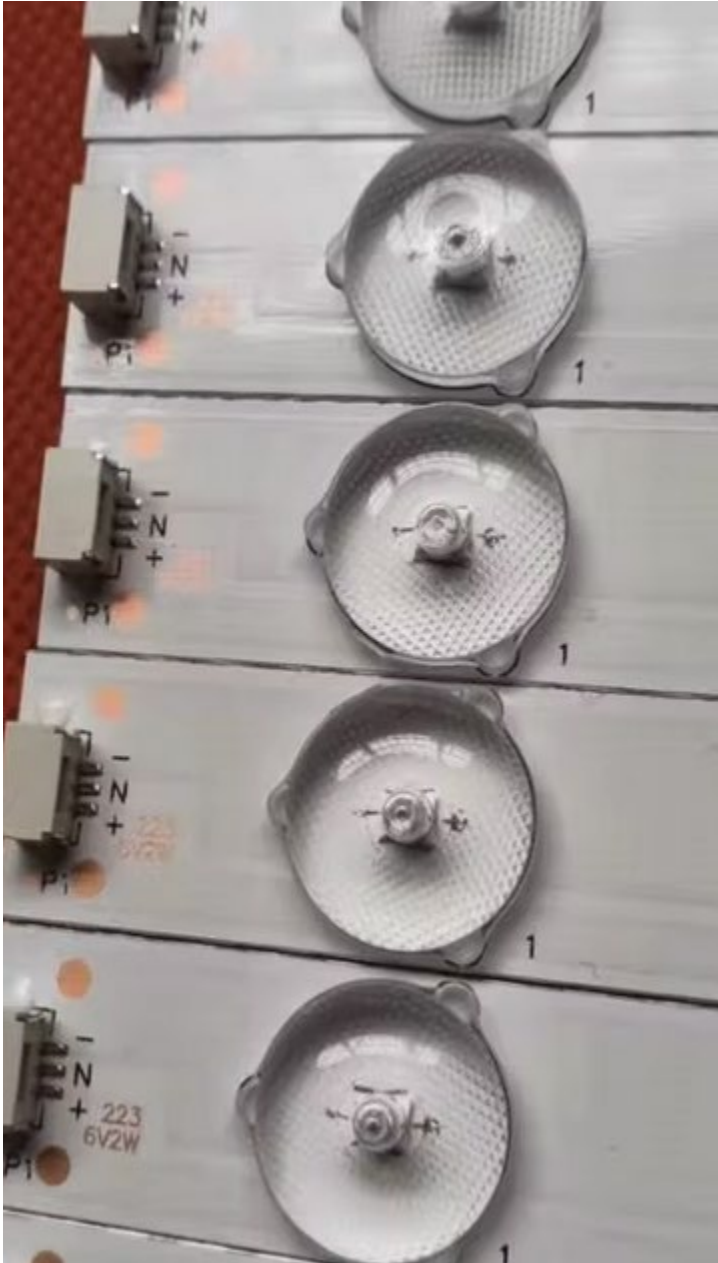
Q7, QM7, QM8, and NXTFRAME products. For example, the S-Series 55US57 infringes at least claim 1 of the '378 Patent.

214. For example, Defendants have and continue to directly infringe at least claim 1 of the '378 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a lens comprising: a lens body having a convex top surface and a bottom surface, the convex top surface including a first recessed part at a central portion thereof and a flat top surface at a circumference of the top surface of the lens body, the bottom surface including a second recessed part at a central portion thereof, wherein the flat top surface is disposed lower than a lowest point of the first recessed part, and the flat top surface is disposed lower than a highest point of the second recessed part; and a plurality of lens supporters at the bottom surface of the lens body, wherein a maximum width at a portion in which the convex top surface of the lens body is curved ranges from about 12 mm to about 18 mm, wherein a maximum width of the lens body ranges from about 13 mm to about 19 mm, wherein a ratio of a maximum width of the second recessed part to the maximum width at the portion in which the convex top surface of the lens body is curved ranges from about 0.15 to about 0.27, and wherein a ratio of the maximum width of the second recessed part to the maximum width of the lens body ranges from about 0.14 to about 0.25.

215. The Accused Products comprise a lens body having a convex top surface and a bottom surface, the convex top surface including a first recessed part at a central portion thereof and a flat top surface at a circumference of the top surface of the lens body, the bottom surface including a second recessed part at a central portion thereof, wherein the flat top surface is disposed lower than a lowest point of the first recessed part, and the flat top surface is disposed lower than a highest point of the second recessed part, as shown below for the 006-P1K3465A LED strips of an 55US57.



<https://www.youtube.com/watch?v=TPsJpG2Ho8E&t=2333s> at 39:27



https://pt.aliexpress.com/item/1005005885817123.html?src=google&aff_fcid=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=8979c87ae6e4cfca399d3537e393d7f-1723002088397-01557-UneMJZVf&terminal_id=b65c4fec0a5c46b982c2e58f95663c5d&afSmartRedirect=n&gatewayAdapt=glo2bra

216. The Accused Products comprise a plurality of lens supporters at the bottom surface of the lens body. For example, upon information and belief, each lens of the LED strips on a

55US57 comprise at least three legs.

217. The Accused Products comprise an apparatus wherein a maximum width at a portion in which the convex top surface of the lens body is curved ranges from about 12 mm to about 18 mm, as shown above for the 006-P1K3465A LED strips of an 55US57.

218. The Accused Products comprise an apparatus wherein a maximum width of the lens body ranges from about 13 mm to about 19 mm, as shown above for the 006-P1K3465A LED strips of an 55US57.

219. The Accused Products comprise an apparatus wherein a ratio of a maximum width of the second recessed part to the maximum width at the portion in which the convex top surface of the lens body is curved ranges from about 0.15 to about 0.27, as shown above for the 006-P1K3465A LED strips of an 55US57.

220. The Accused Products comprise an apparatus wherein a ratio of the maximum width of the second recessed part to the maximum width of the lens body ranges from about 0.14 to about 0.25, as shown above for the 006-P1K3465A LED strips of an 55US57.

221. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '378 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users

suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '378 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '378 Patent, but while remaining willfully blind to the infringement.

222. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '378 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '378 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '378 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '378 Patent. Defendants perform these affirmative acts with knowledge of the '378 Patent and with intent, or willful blindness, that they cause the direct infringement of the '378 Patent.

223. Defendants have willfully infringed, and continue to willfully infringe, the '378 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '378 Patent, at

least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.¹⁸

224. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '378 Patent in an amount to be proved at trial.

225. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '378 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT XIII
(Infringement of the '411 Patent)

226. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

227. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '411 Patent.

228. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '411 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '411 Patent including, but not limited to, at least the Accused Products.

229. Defendants have directly infringed and continue to directly infringe the '411 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '411 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '411 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6,

¹⁸ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

Q7, QM7, QM8, and NXTFRAME products. For example, the Q6 75Q691F infringes at least claim 1 of the '411 Patent.

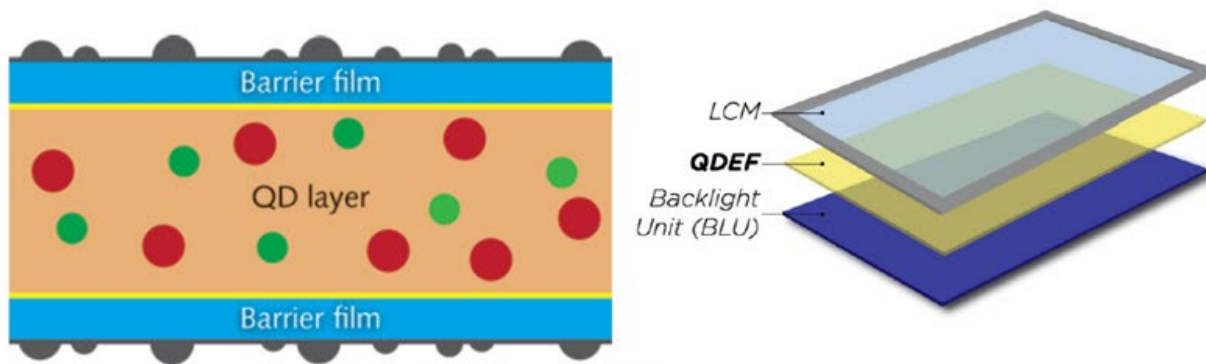
230. For example, Defendants have and continue to directly infringe at least claim 1 of the '411 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a photoluminescent sheet comprising: a resin layer; a phosphor configured to convert a wavelength of light emitted from an LED in the resin layer; a first protective film of uniform thickness on a top surface of the resin layer, wherein the first protective film is formed of a transparent synthetic resin; and a second protective film of uniform thickness on a bottom surface of the resin layer, wherein the second protective film is formed of a transparent synthetic resin; wherein the resin layer is interposed between the first protective film and the second protective film, and wherein the first protective film and the second protective film comprise at least one same material.

231. The Accused Products comprise a resin layer. For example, the Q6 75Q691F is a quantum dot television which, upon information and belief, comprises a photoluminescent sheet including a resin layer between its backlight and panel:

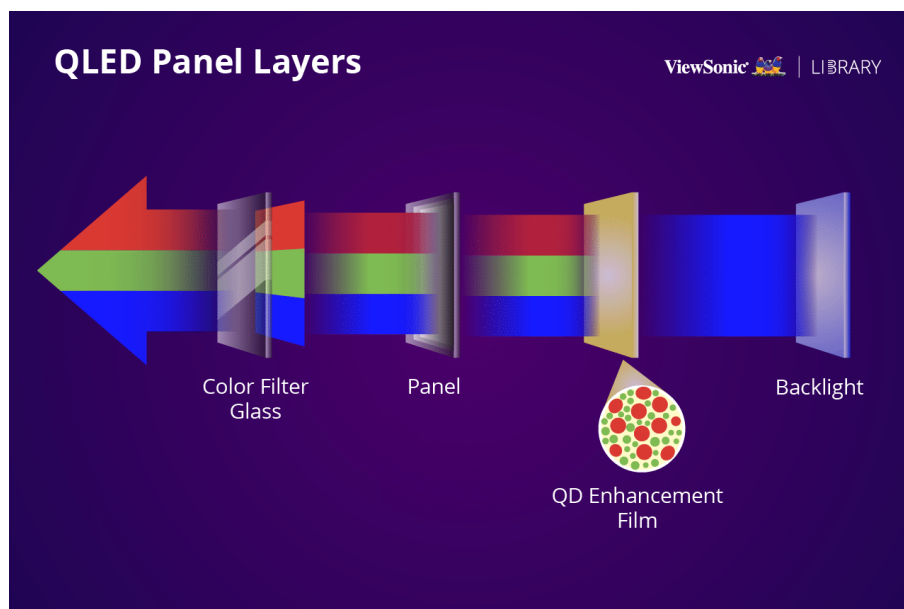
A Quantum Leap in Display

Welcome to TV of the future. LED has been revolutionized, with the addition of billions of Quantum Dot nanocrystals. Your pure, ultra high definition TV is filtered through a layer of QD, enhancing the vibrancy of images - for an industry leading color palette and brightness.

<https://www.tcl.com/global/en/qlcd-tv>



Source: Laser Focus World, Nanosys

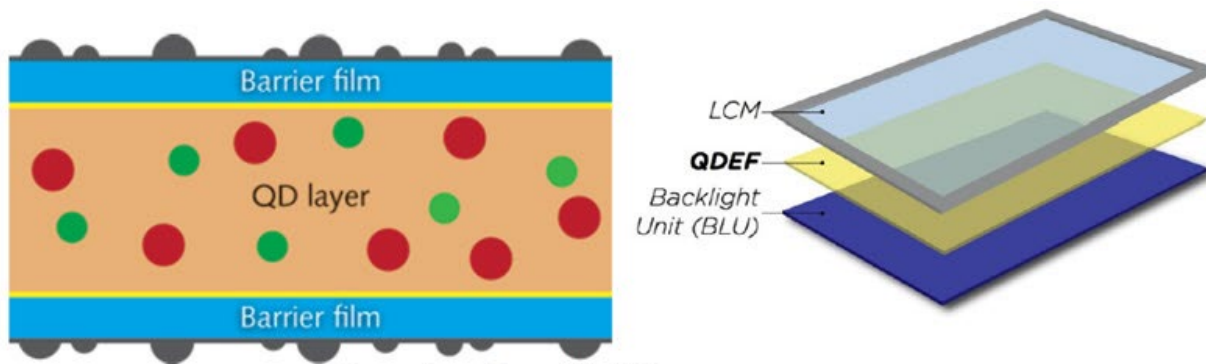


232. The Accused Products comprise a phosphor configured to convert a wavelength of light emitted from an LED in the resin layer. For example, upon information and belief, the Q6 75Q691F comprises a QD enhancement film which includes a phosphor configured to convert a wavelength of light from an LED.¹⁹

233. The Accused Products comprise a first protective film of uniform thickness on a top surface of the resin layer, wherein the first protective film is formed of a transparent synthetic resin and a second protective film of uniform thickness on a bottom surface of the resin layer,

¹⁹ See e.g. <https://www.idtechex.com/en/research-article/quantum-dots-evolving-downconverter-technology-beyond-phosphors/15633>

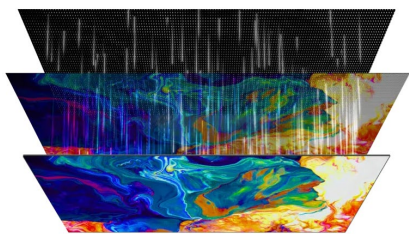
wherein the second protective film is formed of a transparent synthetic resin, wherein the resin layer is interposed between the first protective film and the second protective film. For example, upon information and belief, the Q6 75Q691F comprises barrier film layers of uniform thickness on a top and bottom surface of the quantum dot layer, formed of a transparent synthetic resin, e.g. PET.



Source: Laser Focus World, Nanosys

Precise Contrast Control

Display has been revolutionized with full array Mini LED. Incredible resolution is delivered by an increased number of independent pixel-sized LED light sources; Each one precisely controlled to deliver deeper blacks, more brilliant brightness, and greater contrast.



<https://www.tcl.com/global/en/qled-tv>

234. The Accused Products comprise an apparatus wherein the first protective film and the second protective film comprise at least one same material. For example, upon information

and belief, the first and second protective films both contain PET.

235. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '411 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '411 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '411 Patent, but while remaining willfully blind to the infringement.

236. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '411 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such

that the '411 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '411 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '411 Patent. Defendants perform these affirmative acts with knowledge of the '411 Patent and with intent, or willful blindness, that they cause the direct infringement of the '411 Patent.

237. Defendants have willfully infringed, and continue to willfully infringe, the '411 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '411 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKIN Semiconductor.²⁰

238. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '411 Patent in an amount to be proved at trial.

239. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '411 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

COUNT XIV
(Infringement of the '352 Patent)

240. Paragraphs 1 through 39 are incorporated by reference as if fully set forth herein.

241. LGI has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '352 Patent.

²⁰ See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

242. Defendants infringe, contribute to the infringement of, and/or induce infringement of the '352 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the '352 Patent, including, but not limited to, at least the Accused Products.

243. Defendants have directly infringed and continue to directly infringe the '352 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '352 Patent. Upon information and belief, these products include the Accused Products that practice the methods and systems covered by the '352 Patent, including, for example, LED, QLED, and QD-MINI LED televisions or displays, including at least the S2, S3, S4, S5, 4-series, C8-Series, P6-Series, S-Series, Q5, Q6, Q7, QM7, QM8, and NXTFRAME products. For example, the Q6 75Q691F infringes at least claim 1 of the '352 Patent.

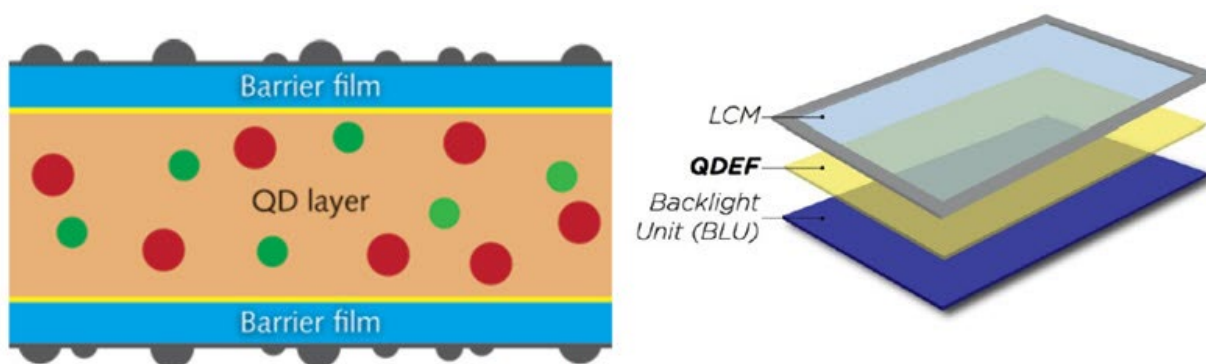
244. For example, Defendants have and continue to directly infringe at least claim 1 of the '352 Patent by making, using, offering to sell, selling, and/or importing into the United States products that comprise a photoluminescent sheet comprising: a resin layer; a phosphor configured to convert a wavelength of light emitted from an LED in the resin layer; a curing agent in the resin layer; an additive configured to disperse the phosphor in the resin layer; a first protective film of uniform thickness on a top surface of the resin layer, wherein the first protective film is formed of a transparent synthetic resin which is not curable by light; and a second protective film of uniform thickness on a bottom surface of the resin layer, wherein the second protective film is formed of a transparent synthetic resin which is not curable by light.

245. The Accused Products comprise a resin layer. For example, the Q6 75Q691F is a quantum dot television which, upon information and belief, comprises a photoluminescent sheet including a resin layer between its backlight and panel:

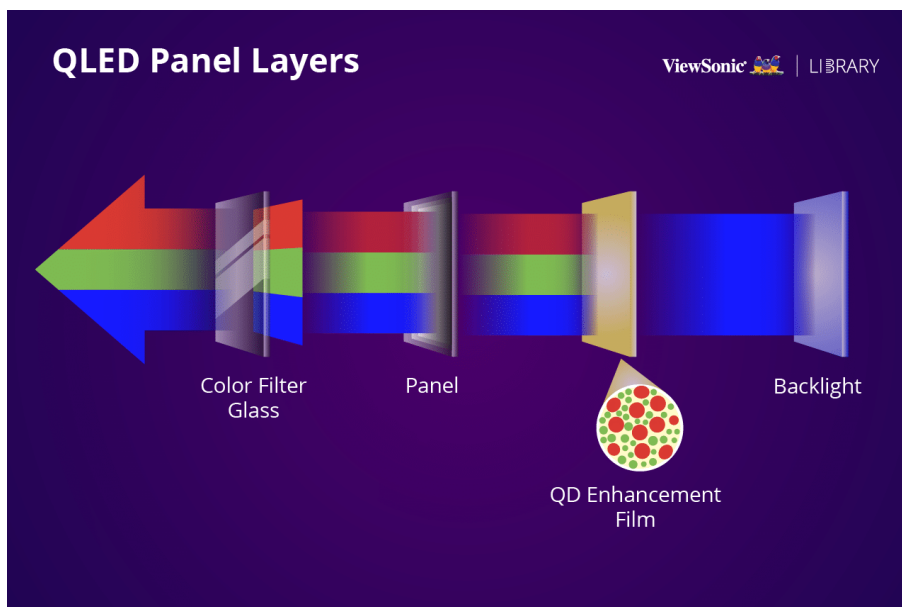
A Quantum Leap in Display

Welcome to TV of the future. LED has been revolutionized, with the addition of billions of Quantum Dot nanocrystals. Your pure, ultra high definition TV is filtered through a layer of QD, enhancing the vibrancy of images – for an industry leading color palette and brightness.

<https://www.tcl.com/global/en/qled-tv>



Source: Laser Focus World, Nanosys



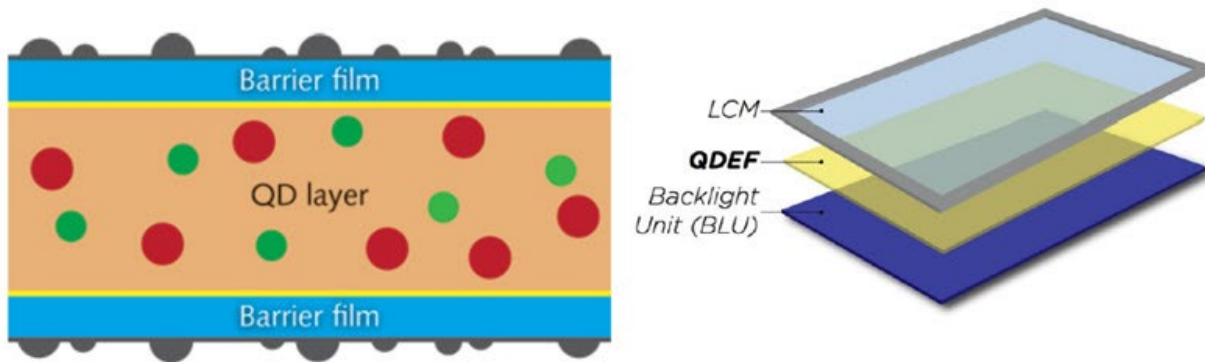
246. The Accused Products comprise a phosphor configured to convert a wavelength of light emitted from an LED in the resin layer. For example, upon information and belief, the Q6 75Q691F comprises a QD enhancement film which includes a phosphor configured to convert a wavelength of light from an LED.²¹

247. The Accused Products comprise a curing agent in the resin layer. For example, upon information and belief, the quantum dot resin layer includes a UV curing agent ,such as a silicone-based curing agent.

248. The Accused Products comprise an additive configured to disperse the phosphor in the resin layer. For example, upon information and belief, the Q6 75Q691F comprises a silicone surface additive and/or other rheological additive to disperse phosphor in the resin layer.

249. The Accused Products comprise a first protective film of uniform thickness on a top surface of the resin layer, wherein the first protective film is formed of a transparent synthetic resin which is not curable by light and a second protective film of uniform thickness on a bottom surface of the resin layer, wherein the second protective film is formed of a transparent synthetic resin which is not curable by light. For example, upon information and belief, the Q6 75Q691F comprises barrier film layers of uniform thickness on a top and bottom surface of the quantum dot layer, formed of a transparent synthetic resin, *e.g.*, PET.

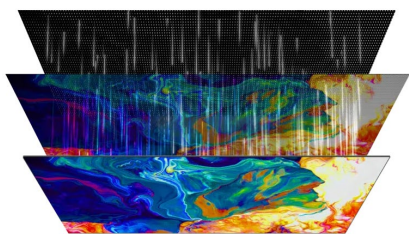
²¹ See *e.g.* <https://www.idtechex.com/en/research-article/quantum-dots-evolving-downconverter-technology-beyond-phosphors/15633>



Source: Laser Focus World, Nanosys

Precise Contrast Control

Display has been revolutionized with full array Mini LED. Incredible resolution is delivered by an increased number of independent pixel-sized LED light sources; Each one precisely controlled to deliver deeper blacks, more brilliant brightness, and greater contrast.



<https://www.tcl.com/global/en/qled-tv>

250. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '352 Patent, as provided by 35 U.S.C. § 271(b), by knowingly and intentionally inducing infringement by others, such as Defendants' customers and end-users, in this District and elsewhere in the United States. For example, Defendants' customers and end-users directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology, such as Accused Products. Defendants induce this direct infringement through their affirmative acts of

manufacturing, selling, distributing, and/or otherwise making available the Accused Products, and providing instructions, documentation, and other information to customers and end-users suggesting that they use the Accused Products in an infringing manner, including technical support, marketing, product manuals, advertisements, and online documentation. Because of Defendants' inducement, Defendants' customers and end-users use the Accused Products in a way Defendants intend and they directly infringe the '352 Patent. Defendants perform these affirmative acts with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '352 Patent, but while remaining willfully blind to the infringement.

251. Defendants have indirectly infringed and continue to indirectly infringe one or more claims of the '352 Patent, as provided by 35 U.S.C. § 271(c), by contributing to direct infringement by others, such as customers and end-users, in this District and elsewhere in the United States. Defendants' affirmative acts of selling and offering to sell the Accused Products in this District and elsewhere in the United States and causing the Accused Products to be manufactured, used, sold and offered for sale contributes to others' use and manufacture of the Accused Products such that the '352 Patent is directly infringed by others. The accused components within the Accused Products are material to the invention of the '352 Patent, are not staple articles or commodities of commerce, have no substantial non-infringing uses, and are known by Defendants to be especially made or adapted for use in the infringement of the '352 Patent. Defendants perform these affirmative acts with knowledge of the '352 Patent and with intent, or willful blindness, that they cause the direct infringement of the '352 Patent.

252. Defendants have willfully infringed, and continue to willfully infringe, the '352 Patent by intentionally and deliberately carrying out acts of direct and indirect infringement, while

knowing or taking deliberate steps to avoid learning, that those acts infringe. For example, upon information and belief, Defendants have known of LGI's patents, including the '352 Patent, at least since they were widely publicized during and after LG Innotek's sale to Suzhou LEKINekin Semiconductor.²²

253. LGI has suffered damages as a result of Defendants' direct and indirect infringement of the '352 Patent in an amount to be proved at trial.

254. LGI has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '352 Patent, for which there is no adequate remedy at law, unless Defendants' infringement is enjoined by this Court.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a jury for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, LGI prays for relief against Defendants as follows:

- a. Entry of judgment declaring that Defendants directly and/or indirectly infringe one or more claims of each of the Patents-in-Suit;
- b. Entry of judgment declaring that Defendants' infringement of the Patents-in-Suit is willful;
- c. An order awarding damages sufficient to compensate Plaintiff for Defendants' infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, including supplemental damages post-verdict, together with pre-judgment and post-judgment interest and costs;
- d. Enhanced damages pursuant to 35 U.S.C. § 284;

²² See e.g. <https://thelec.net/news/articleView.html?idxno=2871>

- e. Entry of judgment declaring that this case is exceptional and awarding Plaintiff its costs and reasonable attorney fees pursuant to 35 U.S.C. § 285;
- f. An accounting for acts of infringement;
- g. Such other equitable relief which may be requested and to which the Plaintiff is entitled; and
- h. Such other and further relief as the Court deems just and proper.

Dated: August 8, 2024

Respectfully submitted,

/s/ Vincent J. Rubino, III

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