UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LONGITUDE LICENSING LIMITED, Plaintiff, v. SHARP CORPORATION, Defendant.	Civil Action No. 2:23-cv-165 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Longitude Licensing Limited ("Plaintiff" or "Longitude"), by its attorneys, alleges patent infringement against Defendant Sharp Corporation ("Sharp" or "Defendant"):

INTRODUCTION

1. This is an action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.* Longitude alleges that Sharp has infringed and continues to infringe, directly and indirectly, seven patents: U.S. Patent Nos. 6,806,500 ("the '500 patent"), 7,196,353 ("the '353 patent"), 7,705,948 ("the '948 patent"), 7,961,171 ("the '171 patent"), 8,319,512 ("the '512 patent"), 9,557,606 ("the '606 patent"), and 10,181,462 ("the '462 patent") (collectively, the "Longitude Patents"). *See* Exs. 1-7, attached.

2. The Longitude Patents are directed to foundational liquid crystal display ("LCD") technologies used in modern LCD devices, panels, and/or modules, covering

innovations relating to, for example, pixel layouts, electrode structures, panel seals and terminals, driving circuitry, and optical layers.

3. Sharp has infringed and continues to infringe the Longitude Patents, directly and indirectly, by: (1) making, using, offering to sell, selling, and/or importing into the United States LCD devices, panels, and/or modules that include the claimed innovations of the Longitude Patents; (2) inducing third parties (e.g., Sharp customers) to use, offer to sell, sell, and/or import into the United States Sharp products and/or components (e.g., Sharp LCD panels) that include the claimed innovations of the Longitude Patents, with knowledge of the Longitude Patents and of the third parties' infringement; and (3) contributing to third parties' (e.g., Sharp customers) direct infringement of the Longitude Patents by offering to sell, selling, and/or importing into the United States components of patented devices, which constitute a material part of the claimed inventions, with knowledge of the Longitude Patents and of the third parties' infringement.

4. Longitude seeks damages and other relief for Sharp's infringement of the Longitude Patents.

THE PARTIES

5. Plaintiff Longitude Licensing Limited is a private limited company registered in the Republic of Ireland, having a principal place of business at Plaza 255, Suite 2A, Blanchardstown Corporate Park 2, Dublin 15, D15 YH6H, Ireland.

6. On information and belief, Defendant Sharp Corporation is a corporation organized and existing under the laws of Japan, having a principal place of business at 1

Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan. Sharp may be served with process by serving the Texas Secretary of State, 1019 Brazos Street, Austin, Texas, 78701, as its agent for service because it engages in business in Texas but has not designated or maintained a resident agent for service of process in Texas, as required by statute. This action arises out of that business. On information and belief, Sharp conducts business in Texas and in the Eastern District of Texas, directly or through intermediaries.

7. Sharp has authorized retailers that offer to sell and sell products that infringe the Longitude Patents throughout the State of Texas, including in this District and to consumers in this District, including, on information and belief: Walmart Marshall Supercenter, 1701 E End Blvd N, Marshall, TX 75670; Target, 3092 N Eastman Rd, Longview, TX 75605; and Amazon.com.

JURISDICTION AND VENUE

8. This is an action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*

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

10. This Court may exercise general and specific personal jurisdiction over Sharp consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, Sharp has intentionally manufactured and/or distributed LCD devices, panels, and/or modules that infringe the Longitude Patents, or caused its subsidiaries, affiliates, or intermediaries to manufacture and/or distribute infringing LCD devices, panels, and/or modules, through

established distribution channels, intending that those products be sold in the United States, the State of Texas, and this District. Further, Sharp has (itself and/or through subsidiaries, affiliates, or intermediaries) committed acts of patent infringement in the United States, the State of Texas, and this District, including by making, using, offering to sell, and/or selling infringing Sharp LCD devices, panels, and/or modules in the United States, the State of Texas, and this District and/or inducing others to commit acts of patent infringement and/or contributing to the direct infringement of others in the United States, the State of Texas, and this District. Accordingly, Sharp has established minimum contacts within the forum and purposefully availed itself of the benefits of Texas, and the exercise of personal jurisdiction over Sharp would not offend traditional notions of fair play and substantial justice. In addition, or in the alternative, this Court has personal jurisdiction over Sharp pursuant to Federal Rule of Civil Procedure 4(k)(2).

11. Venue is proper in this District pursuant to 28 U.S.C. § 1391(c)(3) because Sharp does not reside in the United States and thus may be sued in any judicial district in the United States.

FACTUAL BACKGROUND

I. The Longitude Patents

12. Longitude is a privately owned intellectual property management company. Longitude manages and licenses a portfolio of more than 1,000 active patents worldwide directed to display technologies. Longitude is the exclusive worldwide licensee of the Longitude Patents with exclusive rights to sublicense, enforce, and obtain damages, including past damages, for infringement of the Longitude Patents.

13. The ’500 patent, entitled “Electro-Optical Device and Electronic Apparatus,” duly and legally issued on October 19, 2004, from a patent application filed May 2, 2003, with Hidenori Kawata as the sole named inventor. The ’500 patent claims priority to Foreign (JP) Patent Application No. 2002-130834, filed on May 2, 2002. The claimed inventions relate to LCD panel image display regions including, for example, a nitride film extending on data lines to protect thin-film transistors, providing for brighter, higher-quality images. The ’500 patent also describes and claims a nitride film extending on the data lines in combination with a light-shielding film.

14. The ’353 patent, entitled “Electro-Optical Device and Electronic Apparatus,” duly and legally issued on March 27, 2007, from a patent application filed August 13, 2004, with Masao Murade as the sole named inventor. The ’353 patent claims priority to Foreign (JP) Patent Application No. 2003-306812, filed on August 29, 2003. The claimed inventions relate to improving LCD image quality by surrounding active pixel regions with dummy pixels and light-shielding films. The films provide benefits such as blocking diagonal and reflected light components and sharpening the edges of the resulting images.

15. The ’948 patent, entitled “Liquid Crystal Display Device,” duly and legally issued on April 27, 2010, from a patent application filed October 12, 2007, with Yasuo Segawa, Masaaki Aota, and Shinji Ichikawa as the named inventors. The ’948 patent claims priority to Foreign (JP) Patent Application No. 2006-280583, filed on October 13, 2006. The claimed inventions relate to geometries for slits in liquid crystal pixel structures. These geometries provide benefits including reducing disclination at the slit

ends, which improves light transmission and overall image quality.

16. The ’171 patent, entitled “Electrooptic Device and Electronic Apparatus,” duly and legally issued on June 14, 2011, from a patent application filed October 25, 2007, with Mitsutoshi Miyasaka and Nobuhiko Kenmochi as the named inventors. The ’171 patent claims priority to Foreign (JP) Patent Application No. 2006-289959, filed on October 25, 2006, and No. 2007-214123, filed on August 20, 2007. The claimed inventions relate to a novel configuration of transistors and scan lines associated with the pixels in a display device. The interconnection of multiple transistors and multiple scan lines per pixel provides benefits such as more flexible operation of the device.

17. The ’512 patent, entitled “Flexible Substrate Including Inspection Electrode for Outputting Signal Processed in Integrated Circuit, Electro-Optical Device, and Electronic Device,” duly and legally issued on November 27, 2012, from a patent application filed March 12, 2010, with Katsutoshi Ueno as the sole named inventor. The ’512 patent claims priority to Foreign (JP) Patent Application No. 2009-069825, filed on March 23, 2009. The claimed inventions relate to inspection terminals mounted on the flexible substrate that connects a display substrate to an electronic device in LCD panels that have driving circuit chips mounted on the flexible substrate. The claimed inventions provide benefits such as improving manufacturing yield by enabling the signal processed by the driving circuit chip to be tested during the manufacturing of an LCD panel.

18. The ’606 patent, entitled “Liquid Crystal Display Device Having Rectangular Close-shape Seal Members,” duly and legally issued on January 31, 2017, from a patent application filed December 16, 2014, with Yoichi Momose and Satoshi

Hasegawa as the named inventors. The '606 patent claims priority to Foreign (JP) Patent Application No. 2004-375697, filed on December 27, 2004. The claimed inventions relate to an LCD panel with a continuous seal between substrates and arranging conductive portions away from electrical elements crossing the seal. The "one-drop" fill manufacturing process provided by the inventions provides benefits such as improving speed and reliability compared to prior manufacturing methods.

19. The '462 patent, entitled "Semiconductor Device, Display Device, and Electronic Apparatus," was duly and legally issued on January 15, 2019, from a patent application filed December 9, 2014, with Yutaka Kobashi as the sole named inventor. The '462 patent claims priority to Foreign (JP) Patent Application No. 2004-198040, filed on July 5, 2004. The claimed inventions relate to placing protective circuits on both sides of a driving circuit built into the display substrate of an LCD panel. The two sets of protective circuits provide benefits such as protecting the driving circuitry from electrostatic shock damage that can enter the display substrate circuitry via signal and power lines.

20. Each of the Longitude Patents is valid and enforceable.

21. Sharp is not authorized to practice the Longitude Patents.

22. The claimed inventions of the Longitude Patents enable Sharp and its customers to sell LCD devices, panels, and/or modules with improved consumer-facing benefits, including improved image quality, brightness, and sharpness, and to realize improvements in manufacturing yields and costs.

II. The Inventors

23. The Longitude Patents describe and claim inventions developed by Seiko Epson Corporation ("Epson"). Epson is a Japanese electronics company that is a pioneer in the development of LCD technologies and a recognized innovator in the semiconductor and electronics components and devices spaces. The Longitude Patents cover foundational LCD innovations that Epson developed.

III. Sharp

24. Sharp is a Japanese multinational corporation that designs, manufactures, and sells electronic devices and components. Sharp's annual reports provide that its business includes five operation segments. Sharp identifies three of its segments as "brand businesses" through which Sharp sells Sharp-branded products. And Sharp identifies the remaining two segments as "device businesses" through which Sharp sells components to third parties. Sharp's brand businesses are "Smart Life" (home appliances and related products), "8K Ecosystem" (products include LCD televisions and display modules), and "ICT" (mobile phones and personal computers). Sharp's device businesses are "Display Device," which includes Sharp's business supplying LCD panels and/or modules to third parties for applications such as televisions, monitors, smartphones and tablets, and notebook computers; and "Electronic Device," which includes Sharp's business supplying camera modules, sensor modules, and other components to third parties.

25. On information and belief, Sharp imports into, offers to sell in, and sells in the United States Sharp-branded LCD devices and/or modules through its "8K

Ecosystem" segment. For example, in its 2022 annual report, Sharp forecasted that its business would grow mainly in the Americas region and forecasted a 25 percent growth in sales in the Americas, driven by Sharp's "8K Ecosystem" segment. In January 2023, Sharp announced that it would release three models of its flagship AQUOS XLED 4K TV in the United States in spring 2023, plus two OLED TV models and three LCD TV models. On information and belief, Sharp promoted its LCD devices, panels, and/or modules and technologies in the U.S. market at the 2019, 2020, and 2023 Consumer Technology Association-sponsored Consumer Electronics Show ("CES"), a major technology trade show in Las Vegas, Nevada.

26. On information and belief, Sharp's "Display Device" components segment specifically targets and sells into the U.S. market. For example, in its 2022 annual report, Sharp announced the consolidation of Sakai Display Products Corporation as a wholly owned subsidiary. Sakai manufactures LCD panels for both Sharp-branded TVs and displays and third-party PCs, automobiles, and VR applications. Sharp identified its subsidiary's "predominance in panel supplies for North America" as one of the reasons it completed the consolidation. Sharp also identified disruptions at U.S. shipping ports as a major near-term risk for its businesses.

27. On information and belief, for the fiscal year ending December 31, 2022, Sharp's "8K Ecosystem" segment (which includes Sharp-branded LCD TVs and displays) generated approximately $4.3 billion in revenue. Its "Display Devices" segment (which includes LCD panels and modules sold as components to third parties) generated approximately $6.5 billion in revenue. On information and belief, a significant portion of

this revenue is attributable to U.S. sales of Sharp-branded LCD products and third-party products that include Sharp LCD panels and/or modules.

28. Sharp also targets the U.S. market for its LCD businesses by obtaining and enforcing U.S. intellectual property rights relating to LCD technology. For example, in a March 2020 press release, Sharp announced that it filed a patent infringement lawsuit against two LCD panel manufacturers in U.S. district court alleging infringement of twelve Sharp LCD-related patents. In the same press release, Sharp stated it holds more than ten thousand display patents in the U.S., China, Japan, and other countries.

29. Thus, Sharp—directly and/or through its subsidiaries, affiliates, or intermediaries—has imported, offered to sell, and sold, and continues to import, offer to sell, and sell infringing LCD devices, panels, and/or modules in the United States through established distribution channels. Sharp intends to sell and does sell infringing products in the United States, the State of Texas, and this District.

IV. Sharp's Direct Infringement and Accused Instrumentalities

30. Sharp has directly infringed and continues to directly infringe, pursuant to 35 U.S.C. § 271(a), one or more claims of each of the Longitude Patents (as further specified in Counts I-VII) by making, using, offering to sell, selling within the United States, and/or importing into the United States, infringing LCD devices, panels, and/or modules. The products that Longitude accuses of infringing the Longitude Patents are collectively referred to herein as the "Accused Instrumentalities."

31. The Accused Instrumentalities include LCD devices, panels, and modules that incorporate the claimed inventions, including Sharp-branded TVs and displays (the

"Accused Sharp Products"), and Sharp LCD panels and modules used in third-party products, including TVs, monitors, notebook computers, smartphones, tablets, and vehicle infotainment displays (the "Accused Sharp LCD Modules"), as described herein.

32. The Accused Sharp Products include products made, used, offered for sale, sold within the United States, and/or imported into the United States that infringe the Longitude Patents.

33. On information and belief, Sharp—directly and/or through its subsidiaries, affiliates, or intermediaries—imports, offers to sell, and sells Accused Sharp Products in the United States, and offers to sell and sells Accused Sharp LCD Modules to third parties for sale in the United States, and actively targets the U.S. market for sales of the Accused Instrumentalities.

34. The above-described acts of direct infringement committed by Sharp have caused and will continue to cause injury and damage to Longitude.

V. Longitude Provided Actual Notice of Infringement to Sharp

35. Longitude provided actual notice, pursuant to 35 U.S.C. § 287(a), of the Longitude Patents and the alleged infringement over the course of its licensing negotiations with Sharp.

36. Longitude's licensing negotiations with Sharp began on or around March 1, 2019, when 138 East LCD Advancements Ltd. ("138 East"), the owner of the patent portfolio including the Longitude Patents, sent a letter (the "Initial Notice") to Sharp. That letter identified Longitude as the entity that would represent 138 East during licensing negotiations with Sharp. Longitude and its licensing representatives then

participated in at least twelve licensing meetings and exchanged with Sharp numerous claim charts relating to the Longitude Patents and Sharp's infringing products, between approximately May 2019 and November 2022.

37. Over the course of those licensing negotiations, Longitude provided actual notice of the '500, '948, '171, '512, '606, and '462 patents, and identified in claim charts and in letters exemplary infringing Sharp products and/or third-party products incorporating infringing Sharp LCD panels or modules, including large LCD panels or modules used in TVs and monitors, medium-sized LCD panels or modules used in tablets, notebooks, and vehicles, and small LCD panels or modules used in smartphones.

38. Longitude provided to Sharp actual notice of Sharp's infringement of the '948 patent by Accused Instrumentalities on or around March 1, 2019, as part of the Initial Notice.

39. Longitude provided to Sharp actual notice of Sharp's infringement of the '462 patent by Accused Instrumentalities on or around August 23, 2019, in a technical presentation to Sharp during licensing negotiations.

40. Longitude provided to Sharp actual notice of Sharp's infringement of the '500 patent by Accused Instrumentalities on or around February 7, 2020, in a technical presentation to Sharp during licensing negotiations.

41. Longitude provided to Sharp actual notice of Sharp's infringement of the '512, '606, and '171 patents by Accused Instrumentalities on or around September 15, 2022, in letters addressed to Sharp's customers incorporating Sharp's infringing LCD panels and modules. Longitude provided copies of those letters to Sharp at the same time.

42. Longitude provided to Sharp actual notice of Sharp's infringement of the '353 patent by Accused Instrumentalities on or around April 7, 2023, in a letter to Sharp explaining that Sharp's LCD devices, panels, and modules infringe this additional patent, among others.

43. During Longitude's licensing negotiations with Sharp, Longitude invited Sharp to discuss potential licensing arrangements, including three separate formal licensing proposals, all of which Sharp rejected. Sharp continued to make, use, offer to sell, sell within the United States, and/or import into the United States, the Accused Instrumentalities that Longitude identified during these licensing negotiations.

44. Since receiving actual notice of infringement of the Longitude Patents, Sharp has continued to make, use, offer to sell, sell within the United States, and/or import into the United States the Accused Instrumentalities; it has continued to induce third parties to make, use, offer to sell, sell within the United States, and/or import into the United States Accused Sharp LCD Modules; and it has continued to contribute to third parties' making, using, offering to sell, selling within the United States, and/or importing into the United States patented devices incorporating the Accused Sharp LCD Modules.

45. Sharp continued to directly and indirectly infringe the Longitude Patents after Longitude provided actual notice of Sharp's infringement of the Longitude Patents and identified exemplary infringing Sharp products and third-party products incorporating infringing Sharp LCD panels or modules. Sharp knew or should have known that its conduct infringed the Longitude Patents. Sharp's continued and continuing

direct and indirect infringement was and is deliberate and intentional. Sharp has therefore willfully infringed each Longitude Patent since the time each Longitude Patent and Sharp's infringement of the patent was specifically identified during the course of the parties' licensing negotiations: Sharp has willfully infringed the '948 patent since at least March 1, 2019; the '462 patent since at least August 23, 2019; the '500 patent since at least February 7, 2020; the '512, '606, and '171 patents since at least September 15, 2022; and the '353 patent since at least April 7, 2023.

VI. Sharp's Indirect Infringement

46. Sharp has indirectly infringed and continues to indirectly infringe the Longitude Patents by inducing infringement by third parties under 35 U.S.C. § 271(b), including its customers that incorporate Accused Sharp LCD Modules into other electronic devices, and importers, resellers, and end users, in this District and elsewhere in the United States and the State of Texas.

47. Sharp has induced, and continues to induce, others' direct infringement of the Longitude Patents by selling Accused Sharp LCD Modules to third-party customers, including consumer electronics and vehicle manufacturers and/or sellers, who then directly infringe by using, offering to sell, and/or selling within the United States, and/or importing into the United States, those Accused Sharp LCD Modules.

48. Sharp knew and specifically intended that its customers would sell infringing Accused Sharp LCD Modules in the United States and/or cause Accused Sharp LCD Modules to be sold in the United States—or deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced.

Sharp specifically intended that its customers purchase the Accused Sharp LCD Modules and sell the Accused Sharp LCD Modules in the United States or cause Accused Sharp LCD Modules to be sold in the United States, as discussed in section III above. Sharp's direct and indirect purchasers have directly infringed and continue to directly infringe the Longitude Patents by importing the Accused Sharp LCD Modules into the United States, selling and/or offering to sell the Accused Sharp LCD Modules in the United States, using the Accused Sharp LCD Modules in the United States.

49. Sharp has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the Longitude Patents, as set forth herein. Sharp therefore has caused its third-party customers to directly infringe the Longitude Patents with knowledge of the Longitude Patents and specific intent that the customers would directly infringe, or deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced.

50. Sharp also has contributed and continues to contribute to direct infringement of the Longitude Patents by third parties, including its customers, in violation of 35 U.S.C. § 271(c). Sharps offers to sell, sells, and/or imports into the United States components of patented devices—specifically, Accused Sharp LCD Modules that are incorporated into claimed electronic devices. Those Accused Sharp LCD Modules constitute a material part of the claimed electronic devices. Sharp knew that providing infringing Accused Sharp LCD Modules would infringe the Longitude Patents—specifically, the '606 patent—at least after receiving actual notice. The Accused Sharp LCD Modules have no substantial non-infringing use outside of the claimed electronic

devices.

51. Sharp specifically intends to cause the acts constituting direct infringement because it derives significant revenue by selling Accused Sharp LCD Modules to third parties who directly infringe, and whose end-user customers directly infringe, one or more claims of the Longitude Patents. On information and belief, Sharp's "Display Device" segment, which includes LCD panels and modules sold as components to third parties, generated approximately $6.5 billion in revenue for the fiscal year ending 2022, a significant portion of which is attributable to U.S. sales related to third-party products, such as tablets, notebook computers, TVs, vehicles, and VR headsets, that include Accused Sharp LCD Modules. And as discussed in section III above, Sharp specifically targets the U.S. market as a destination for sales of third-party products that include Accused Sharp LCD Modules.

52. The above-described acts of indirect infringement committed by Sharp have caused and will continue to cause injury and damage to Longitude.

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 6,806,500

53. Pursuant to 35 U.S.C. § 282, the '500 patent is presumed valid.

54. Sharp has directly infringed and continues to directly infringe one or more claims of the '500 patent, in violation of 35 U.S.C. § 271(a).

55. The Accused Instrumentalities directly infringe at least claims 4, 5, and 10 of the '500 patent.

56. Paragraphs 58-68 describe the manner in which the Accused Instrumentalities infringe claim 4 of the '500 patent, by way of the exemplary Sharp

LS103K5LX01 LCD panel in the 2021 Mazda CX-9. Longitude's allegations of infringement are not limited to claim 4 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

57. On information and belief, the Accused Instrumentalities, which include at least the Sharp LS120M5LX02A LCD panel in the 2021 Ford F-150, the Sharp CUF8H1A1 5.5-inch 2160 x 3840 LCD panel in the Sony Xperia XZ smartphone, and the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, are in relevant part substantially similar to the exemplary Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, in particular with regard to the manner in which the Accused Instrumentalities include a first substrate, scanning lines, data lines, thin film transistors provided above the first substrate corresponding to intersections of the scanning lines and the data lines, pixel electrodes provided corresponding to the thin film transistors, and a nitride film disposed on only the surface of the data lines and formed in the periphery of an image display region. Paragraphs 58-68 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

58. On information and belief, the LS103K5LX01 LCD panel is a Sharp LCD panel.

59. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device. The devices comprise LCD pixels driven by transistors to display images made up of optical light.

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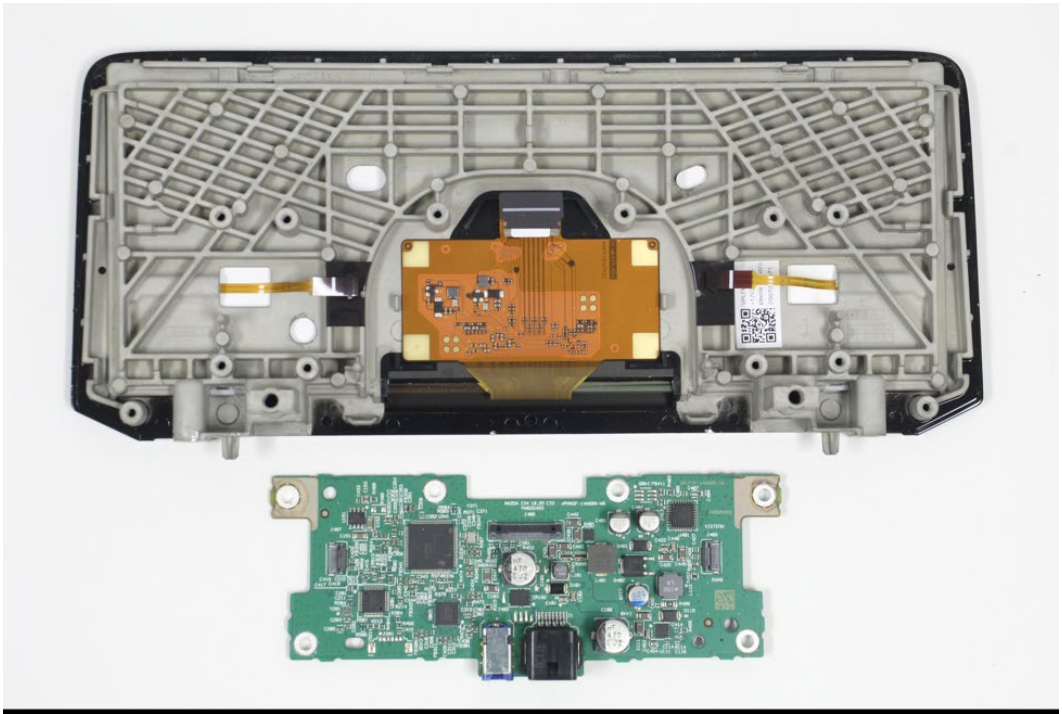

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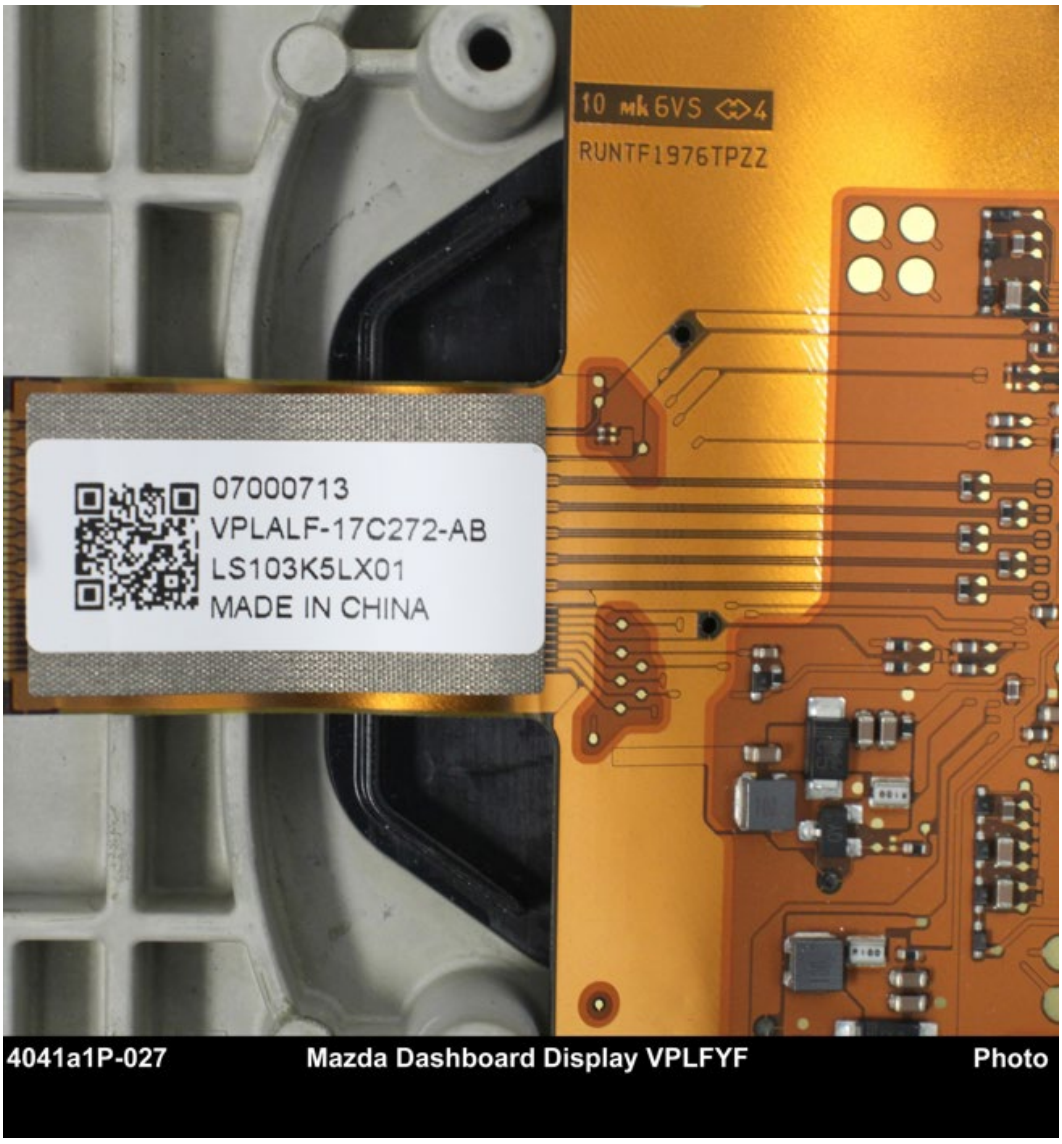
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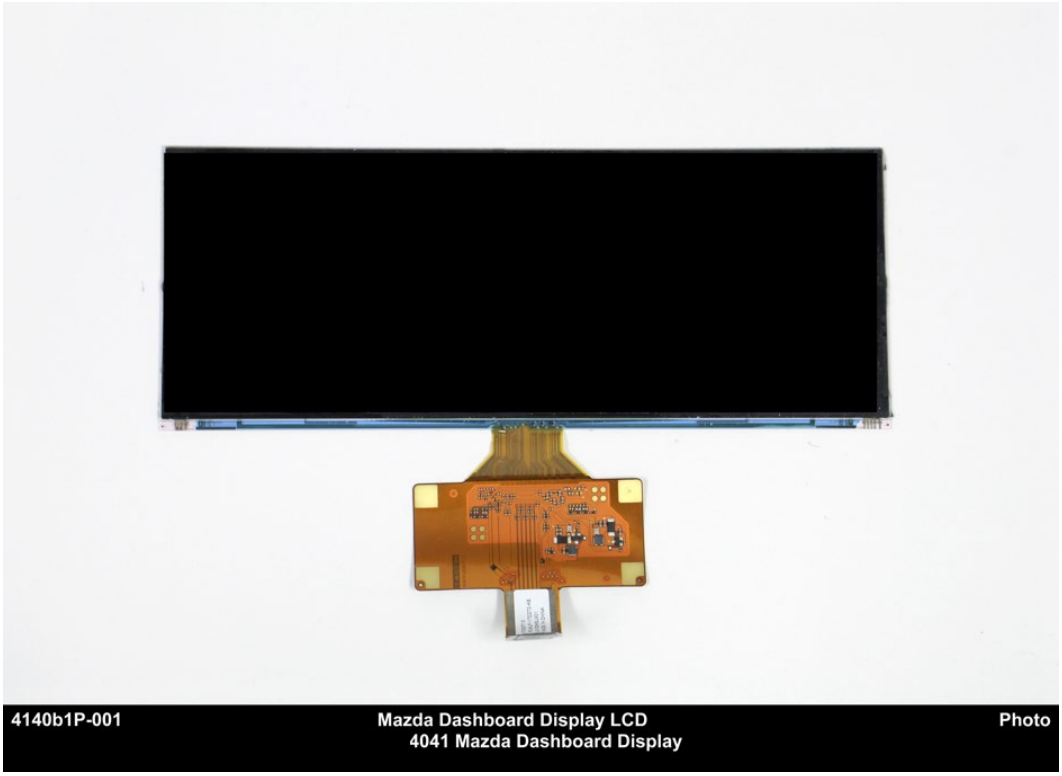
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4041 Mazda Dashboard Display
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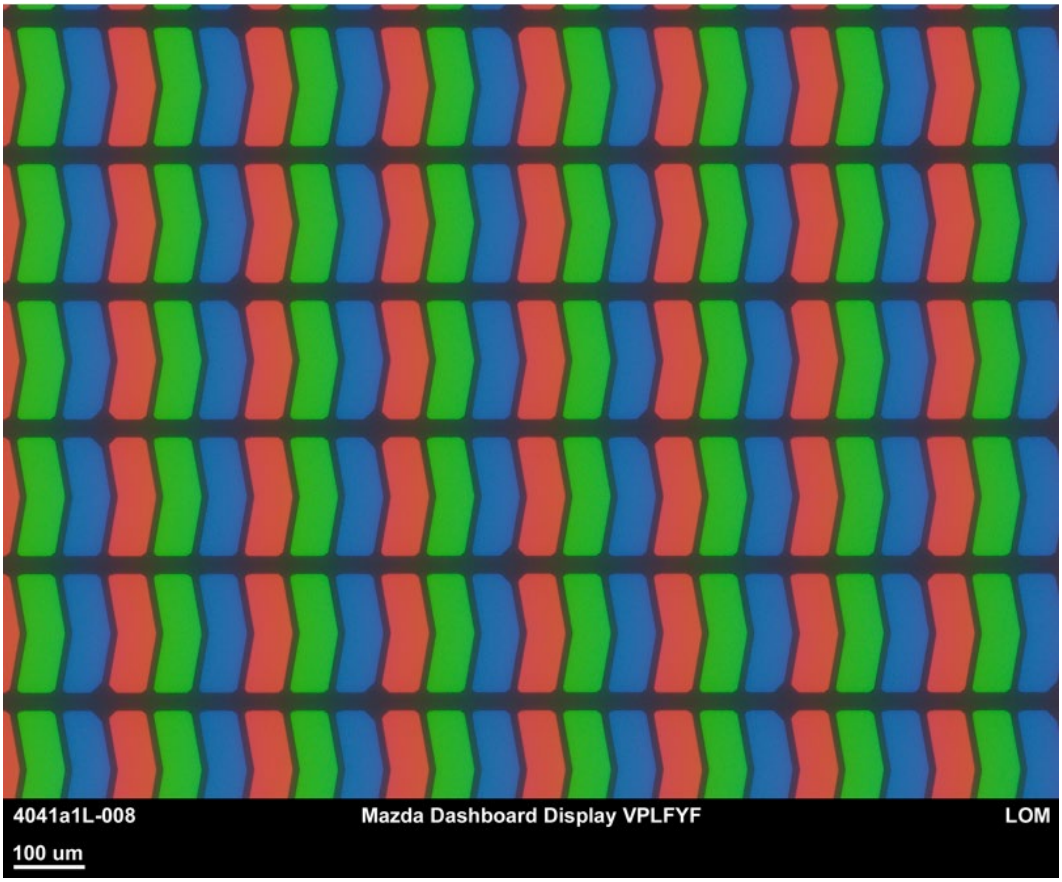
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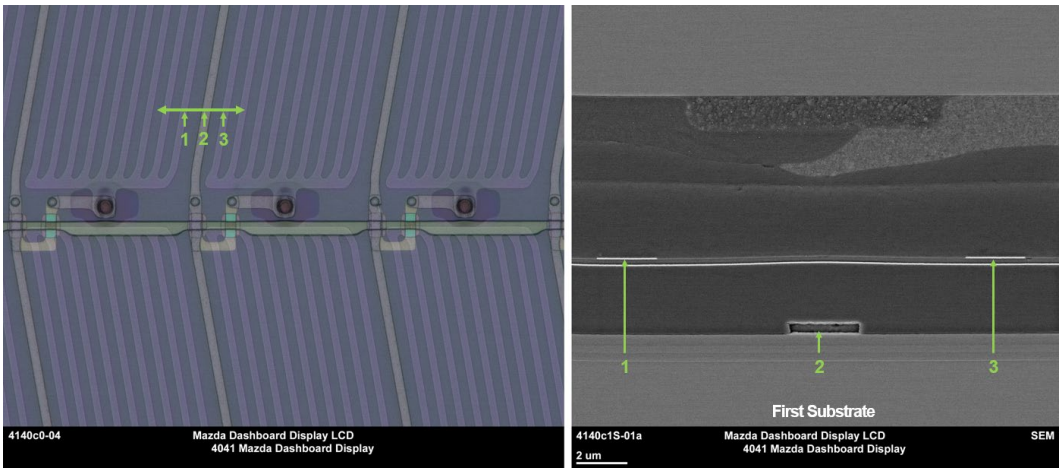
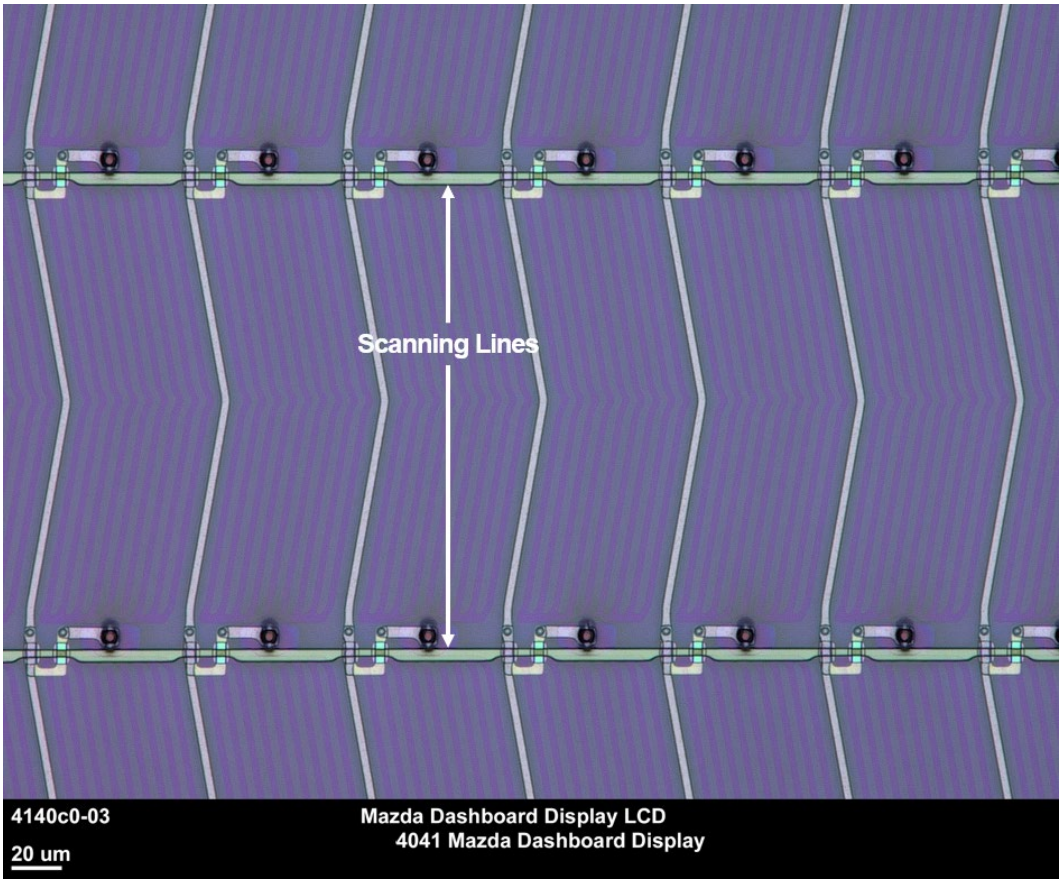
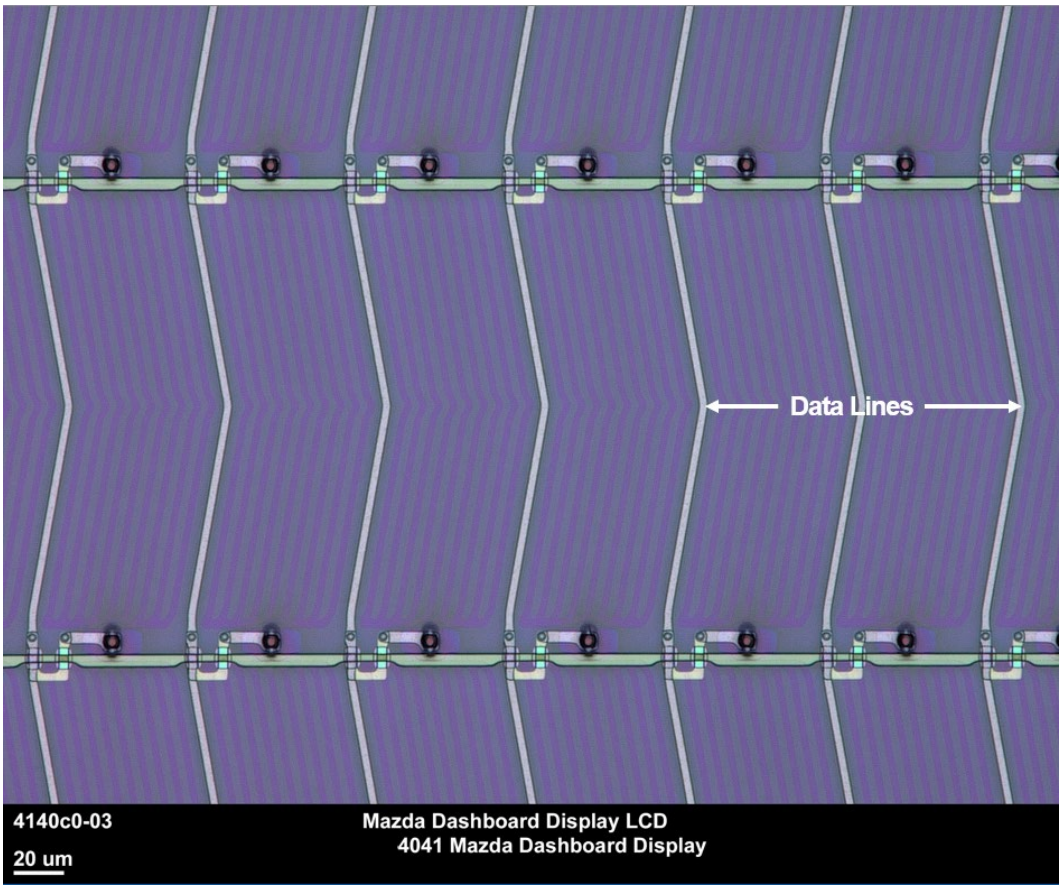
60. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising a first substrate.



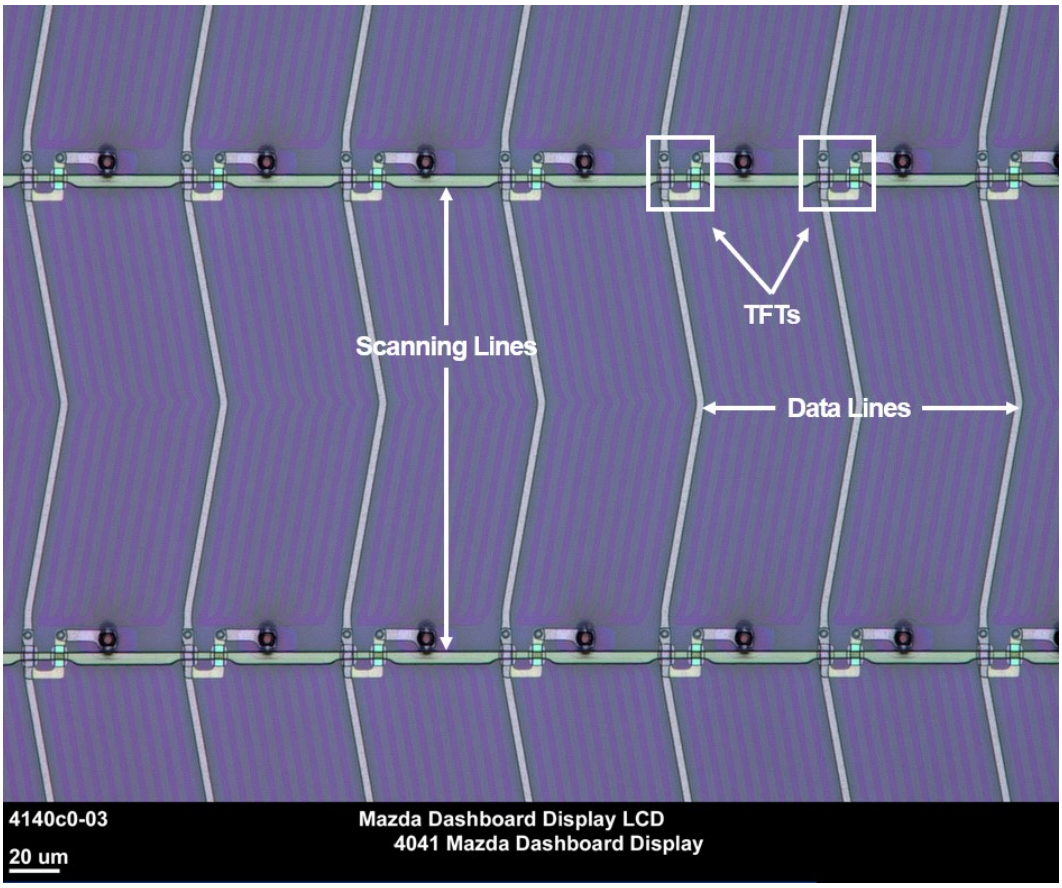
61. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising scanning lines.



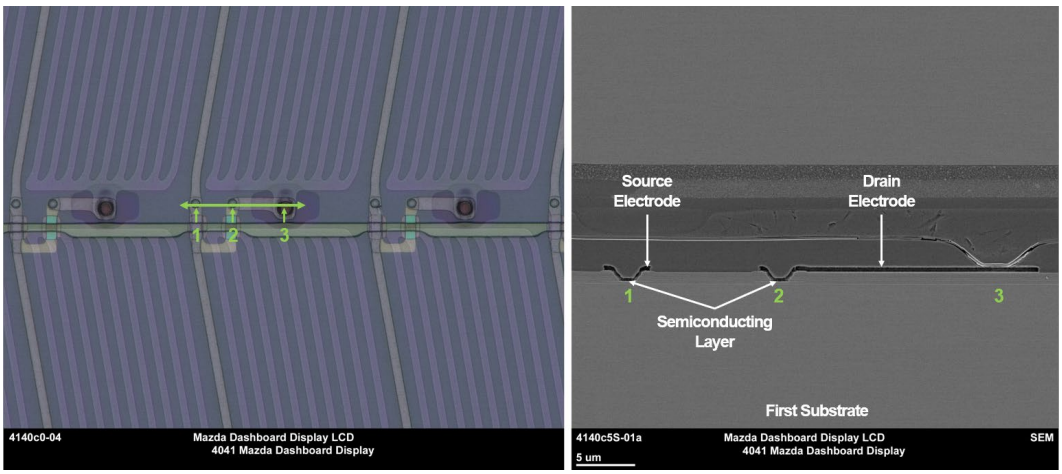
62. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising data lines.



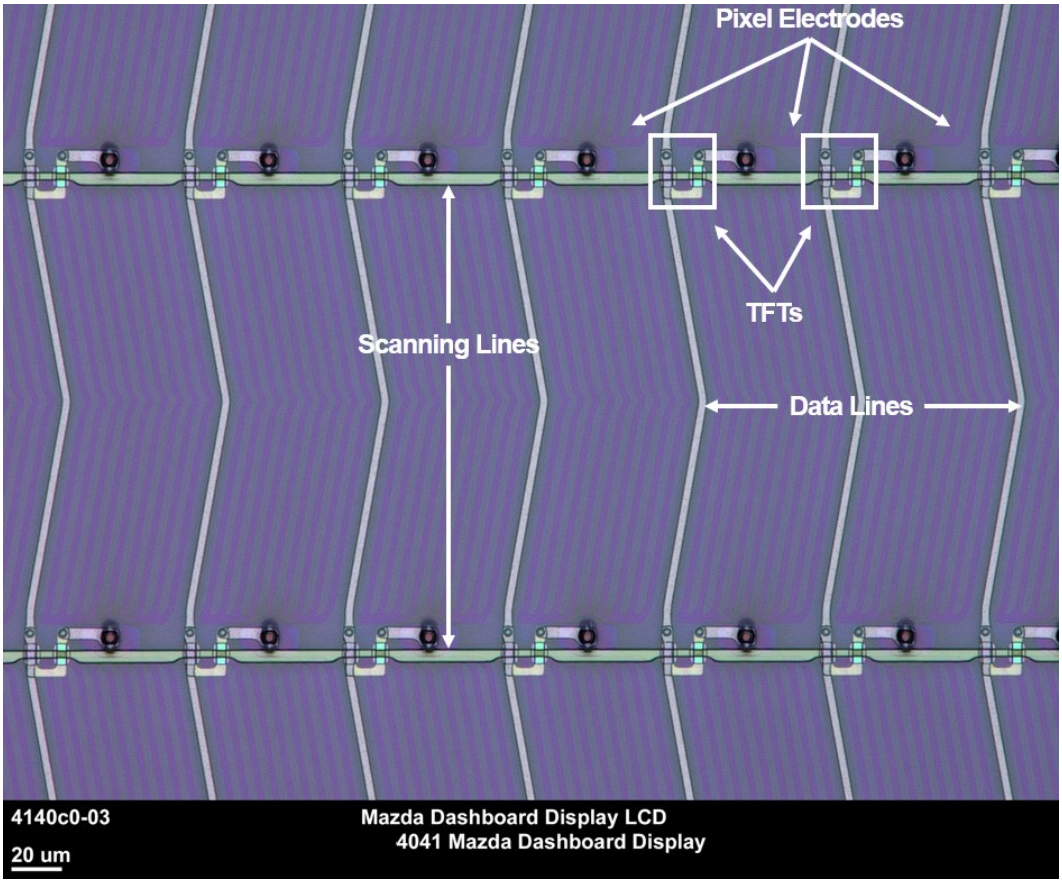
63. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising thin film transistors provided above the first substrate corresponding to intersections of the scanning lines and the data lines.

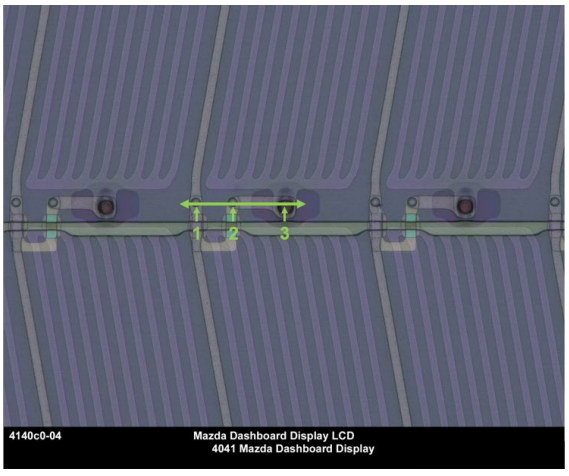


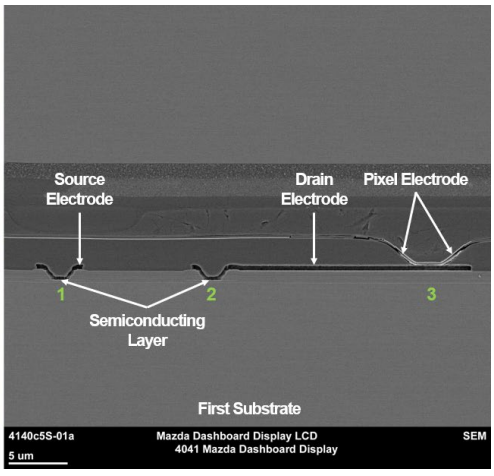
64. The thin film transistors (TFTs) are above the first substrate.



65. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising pixel electrodes provided corresponding to the thin film transistors.

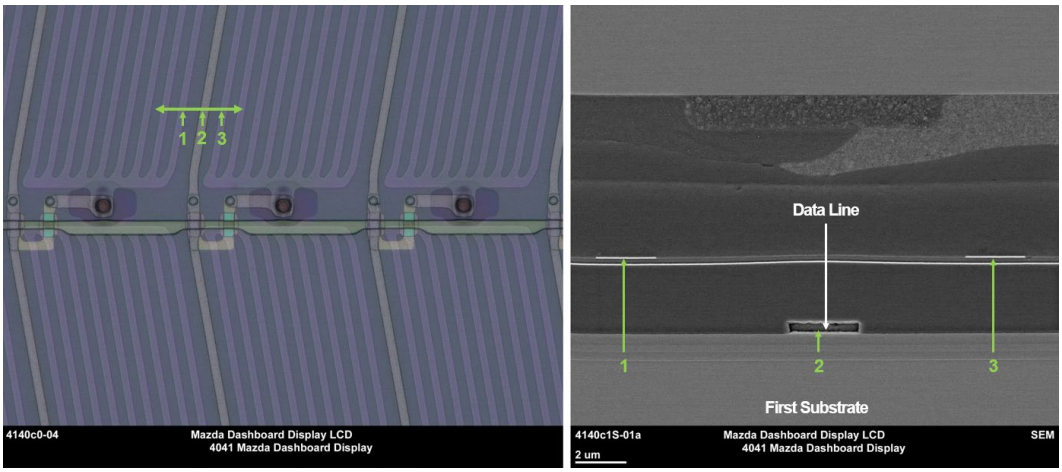


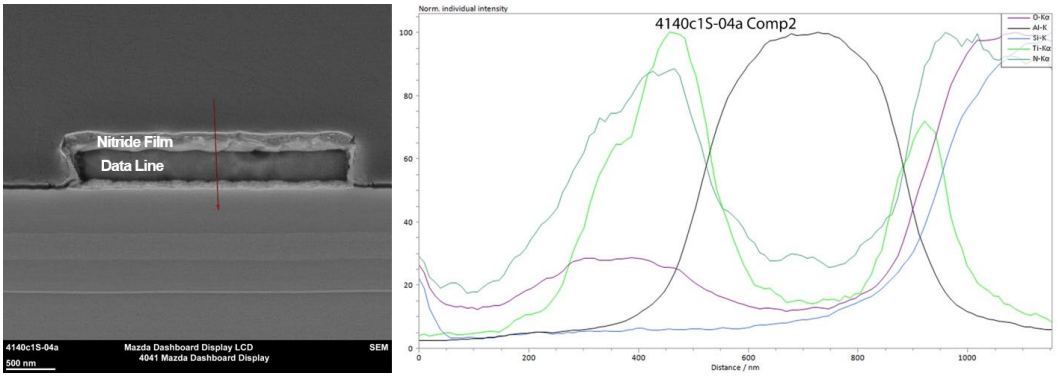




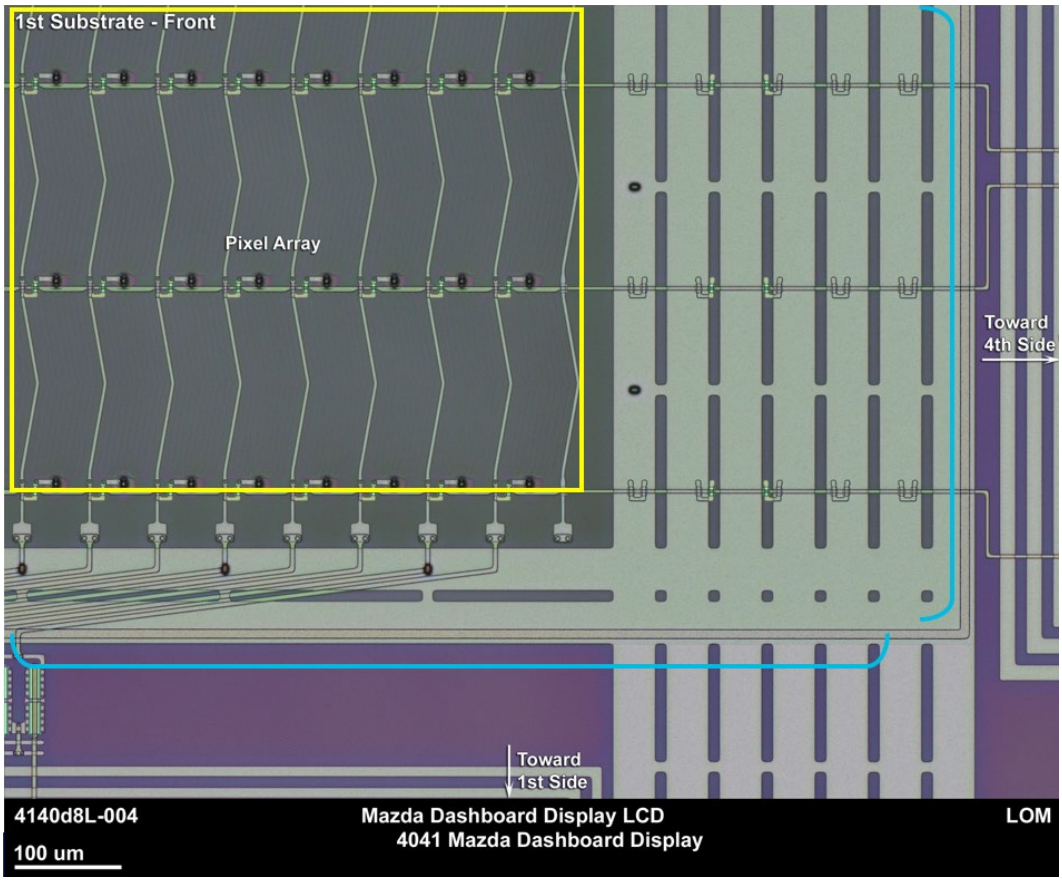
66. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise an electro-optical device comprising a nitride film disposed at least on surfaces of the data lines, the nitride film being formed in the periphery of an image display region that is defined by the region

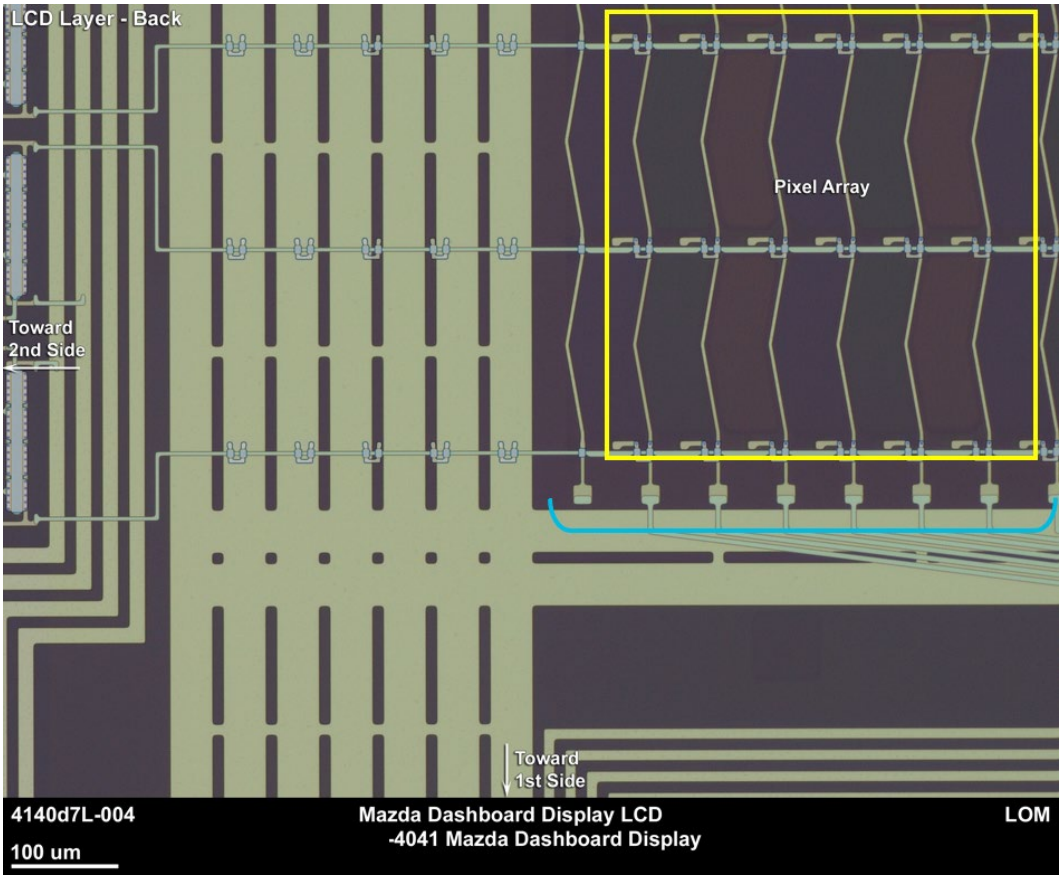
including the pixel electrodes, the scanning lines, and the data lines. The Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9 comprises a nitride film disposed at least on surfaces of its data lines, specifically, TiN.





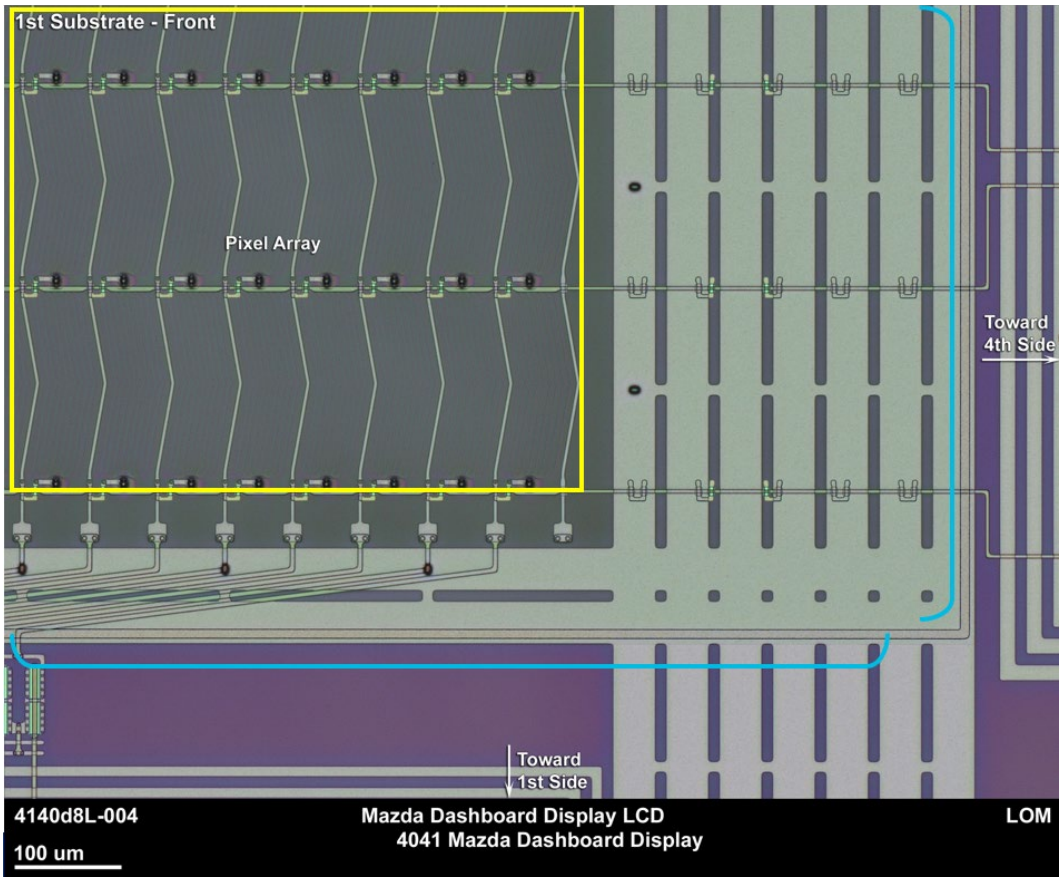
67. The nitride film is formed in the periphery of an image display region defined by the region including the pixel electrodes, the scanning lines, and the data lines.

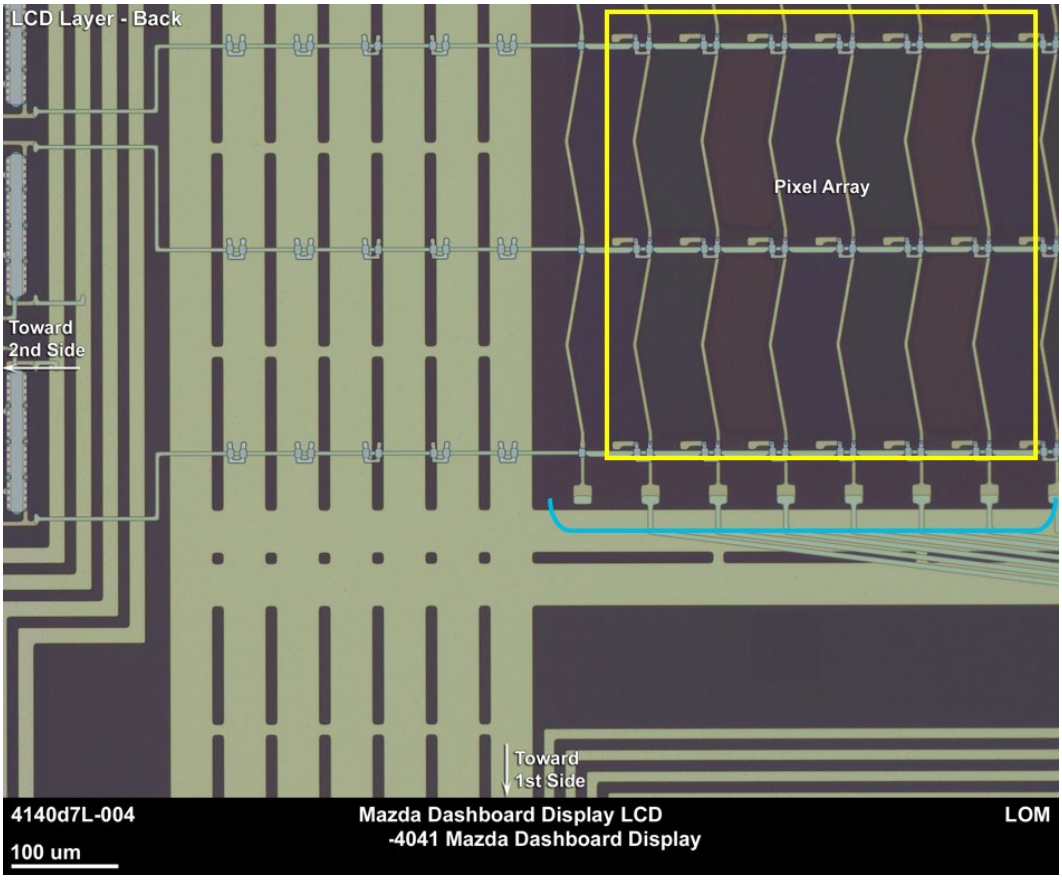

1st Substrate - Front
Pixel Array
Toward
4th Side
Toward
1st Side
4140d8L-004
100 um
Mazda Dashboard Display LCD
4041 Mazda Dashboard Display
LOM



(yellow box identifying image display region; blue brackets identifying periphery; light green metal layer identifying nitride film on data lines and formed in periphery, formed as same metal layer in device (M3))

68. Sharp LCD panels and modules, including, for example, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, comprise the electro-optical device in which the nitride film extends only on the data lines, in addition to in the periphery of the image display region.


1st Substrate - Front
Pixel Array
Toward
4th Side
Toward
1st Side
4140d8L-004
100 um
Mazda Dashboard Display LCD
4041 Mazda Dashboard Display
LOM



(yellow box identifying image display region; blue brackets identifying periphery; light green metal layer identifying nitride film on data lines and formed in periphery, formed as same metal layer in device (M3))

69. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the ’500 patent and the infringement alleged herein as of on or around February 7, 2020, when Longitude provided notice to Sharp.

70. Sharp has indirectly infringed and continues to indirectly infringe the ’500 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of the ’500 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

71. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’500 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’500 patent.

72. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

73. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’500 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and/or using such Accused Instrumentalities in the United States.

74. Sharp has induced others’ direct infringement despite actual notice that the Accused Instrumentalities infringe the ’500 patent. As of at least February 7, 2020, Sharp knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was

induced.

75. The above-described acts of infringement have caused injury and damage to Longitude.

76. Sharp's infringement has been willful.

77. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 7,196,353

78. Pursuant to 35 U.S.C. § 282, the '353 patent is presumed valid.

79. Sharp has directly infringed and continues to directly infringe one or more claims of the '353 patent, in violation of 35 U.S.C. § 271(a).

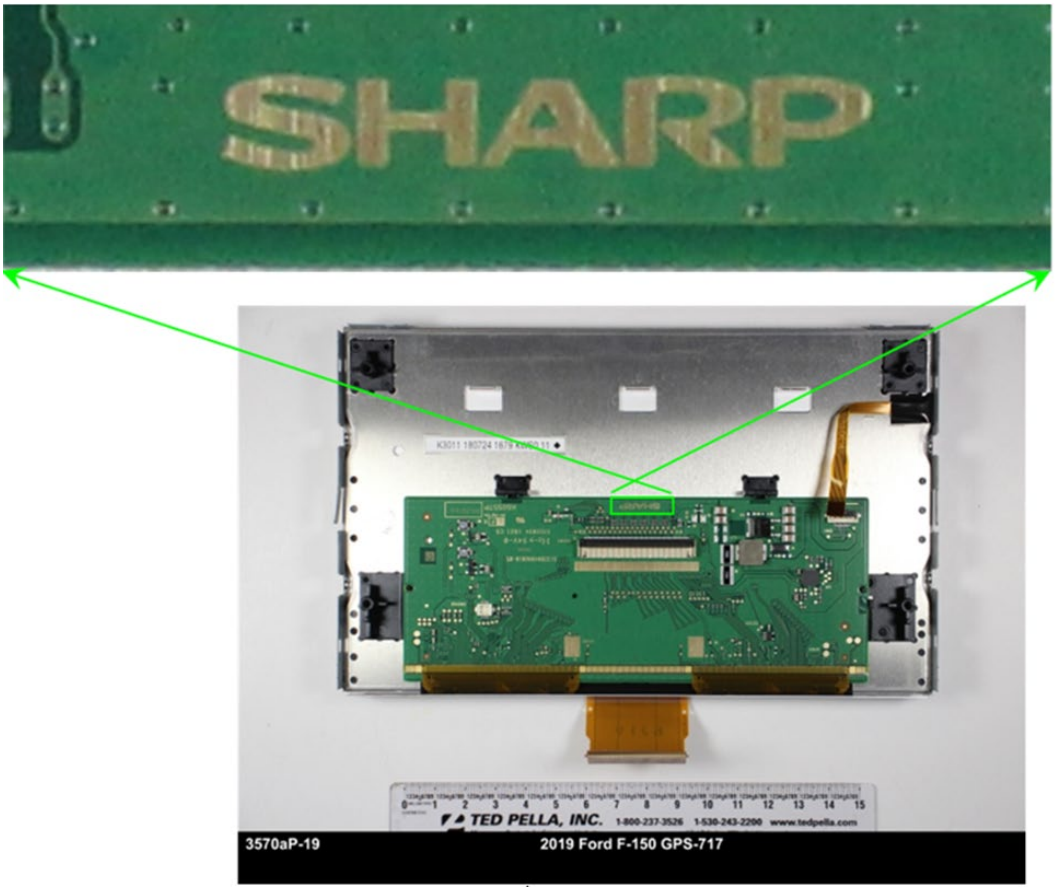
80. The Accused Instrumentalities directly infringe at least claims 1-10, 13, and 15 of the '353 patent.

81. Paragraphs 83-91 describe the manner in which the Accused Instrumentalities infringe claim 1 of the '353 patent, by way of the exemplary Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150 pickup truck. Longitude's allegations of infringement are not limited to claim 1 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

82. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, in particular with regard to the manner in which the

Accused Instrumentalities include an electrooptical device having first and second sets of pixel electrodes respectively located in an image display region and a frame-shaped dummy region surrounding the image display region, where a dummy-pixel light-shielding film covering at least part of opening regions of the dummy pixel electrodes is formed on a lower layer side of wires and electric elements that drive the pixels. Paragraphs 83-91 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

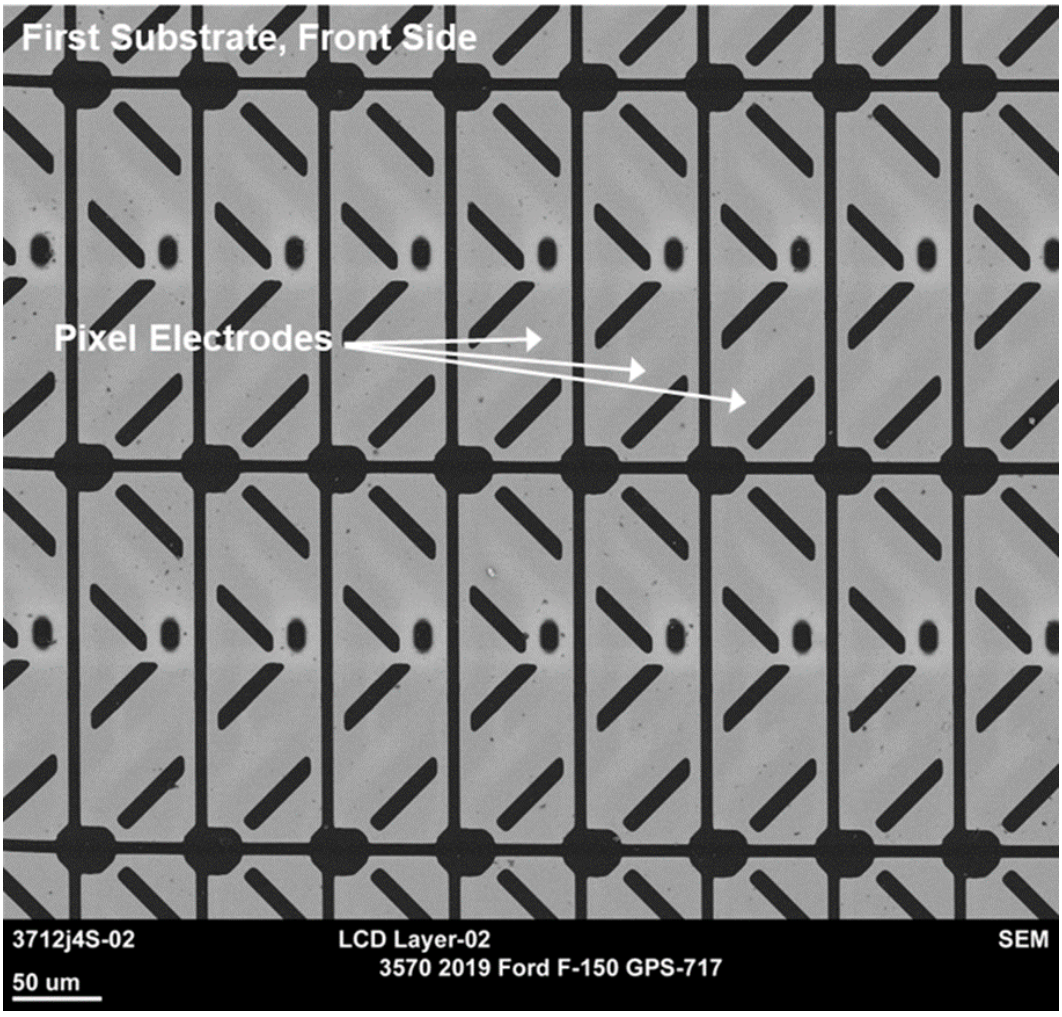
83. The LQ080Y5DZ04J Info-GPS-TV LCD panel is a Sharp panel, as indicated by the "Sharp" logo on the printed circuit board affixed to the back of the panel:

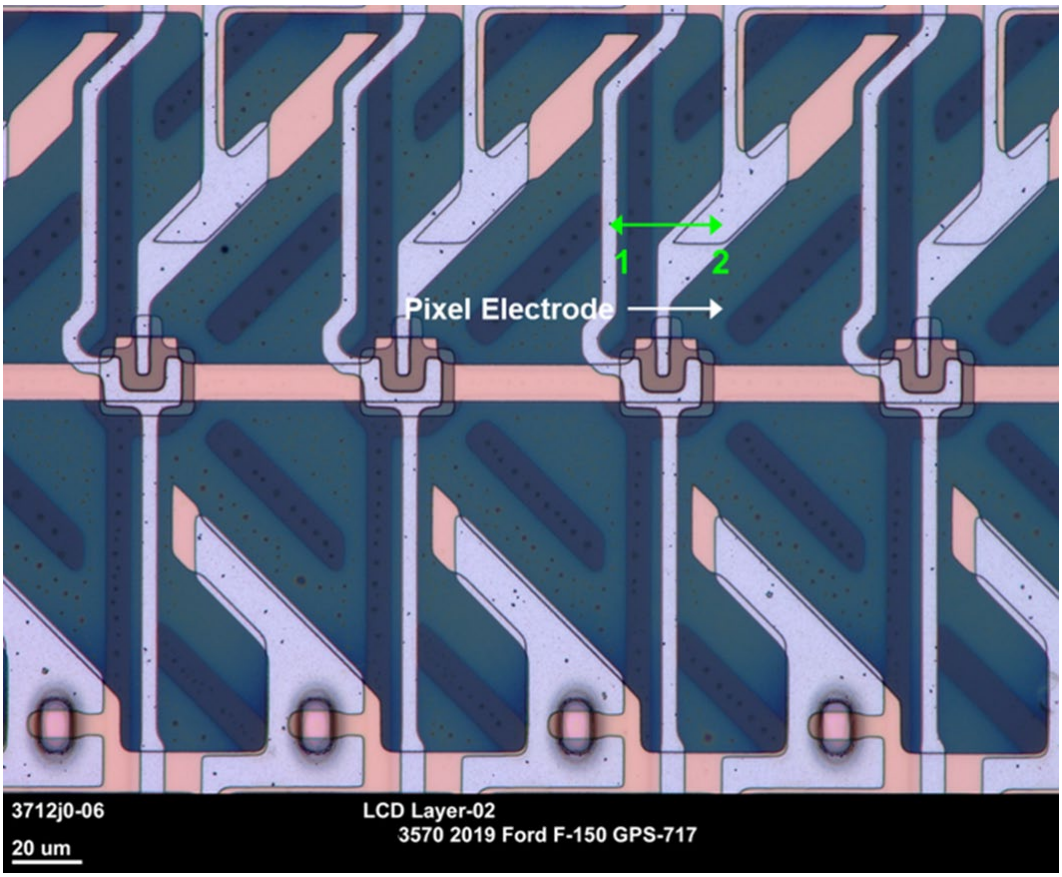


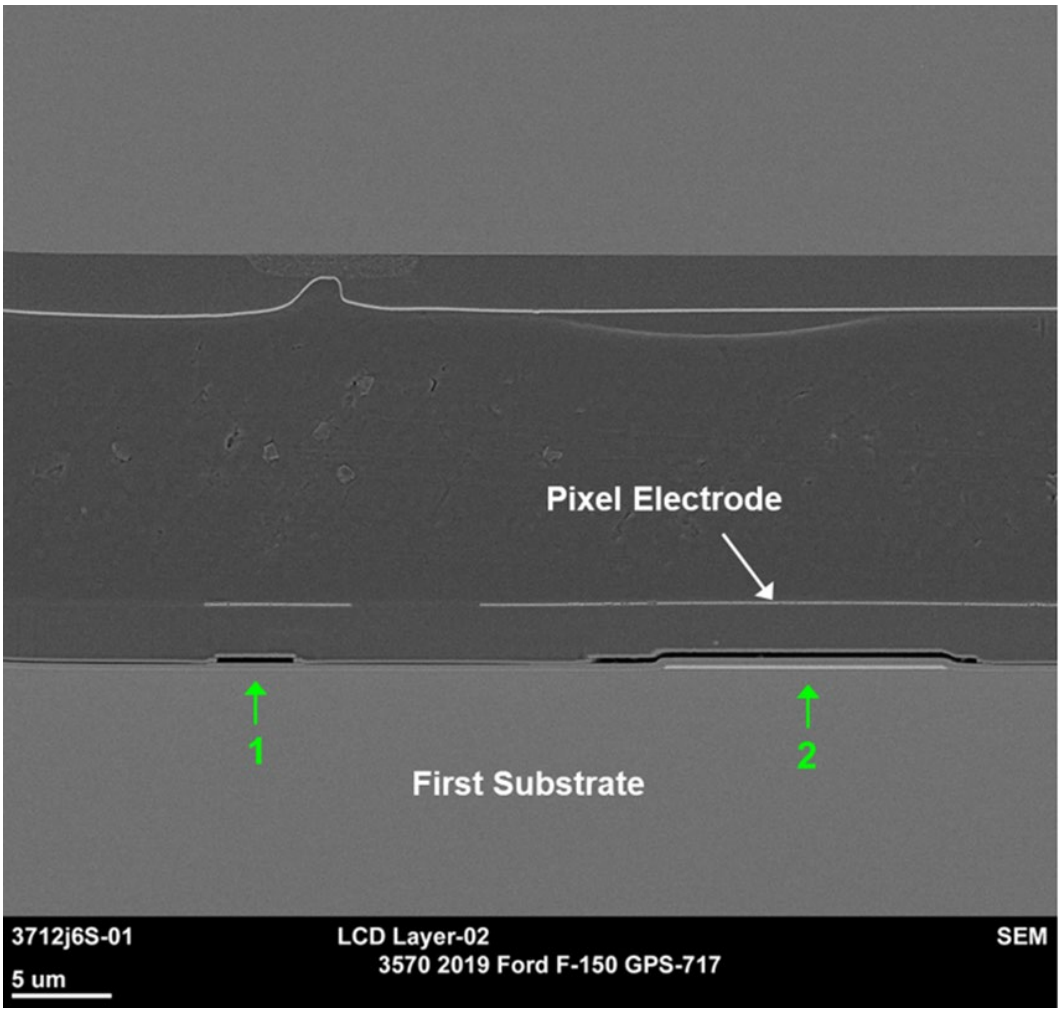
84. Sharp LCD panels and modules, including, for example, the Sharp

LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise an electro-optical device. The devices comprise LCD pixels driven by transistors to display images made up of optical light.

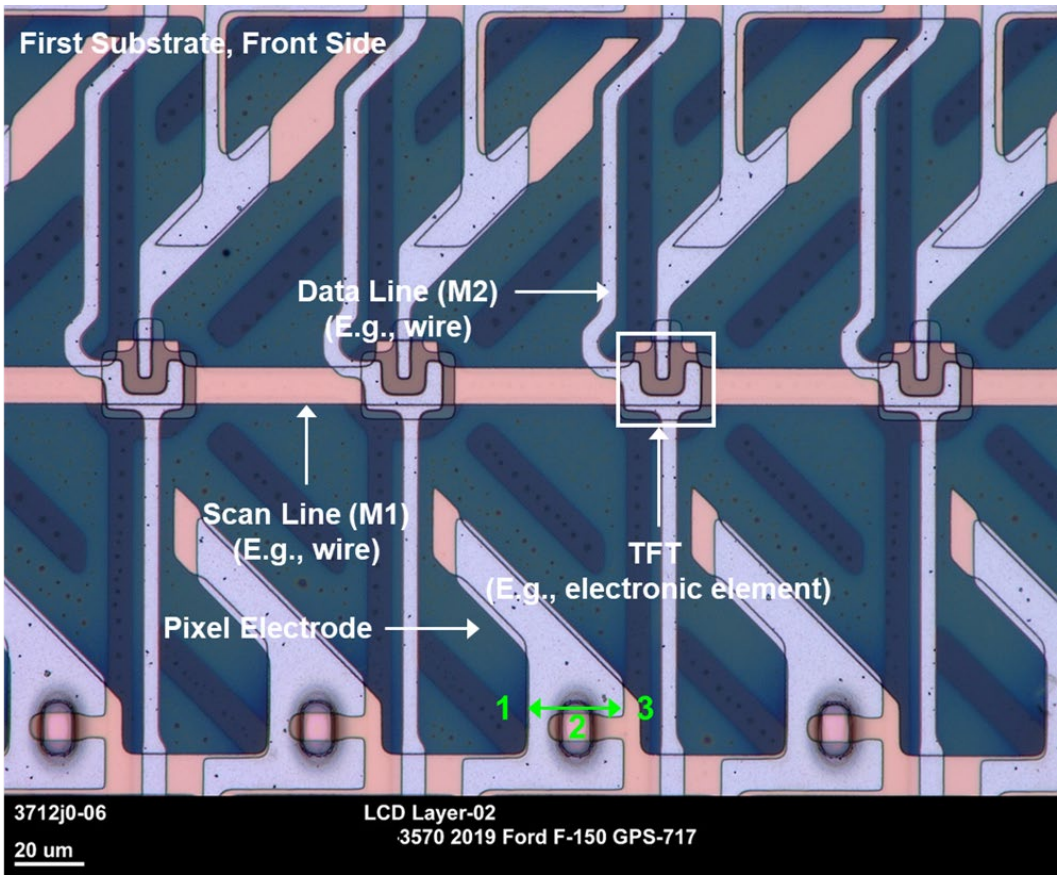
85. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise a plurality of pixel electrodes provided above a substrate.

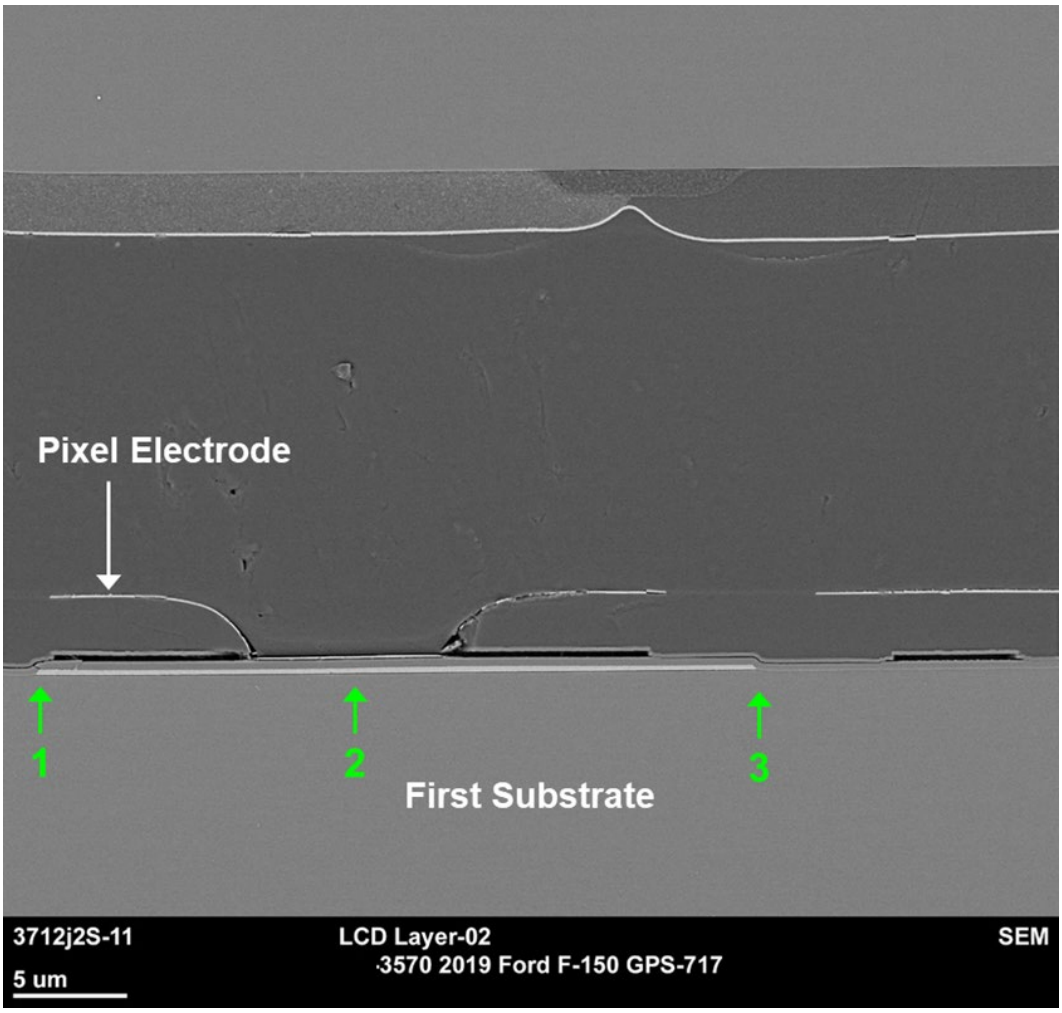



1
2
Pixel Electrode
3712j0-06
20 um
LCD Layer-02
3570 2019 Ford F-150 GPS-717



86. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise at least one of wires and electronic elements that are used to drive the plurality of pixel electrodes.


First Substrate, Front Side
Data Line (M2)
(E.g., wire)
Scan Line (M1)
(E.g., wire)
TFT
(E.g., electronic element)
Pixel Electrode
1
2
3
3712j0-06
20 um
LCD Layer-02
3570 2019 Ford F-150 GPS-717



87. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise an image display area where a first set of pixel electrodes among the plurality of pixel electrodes is located.


See 3712dL-16
See 3712dL-19
See 3712dL-25
See 3712dL-22
3570aP-16
2019 Ford F-150 GPS-717

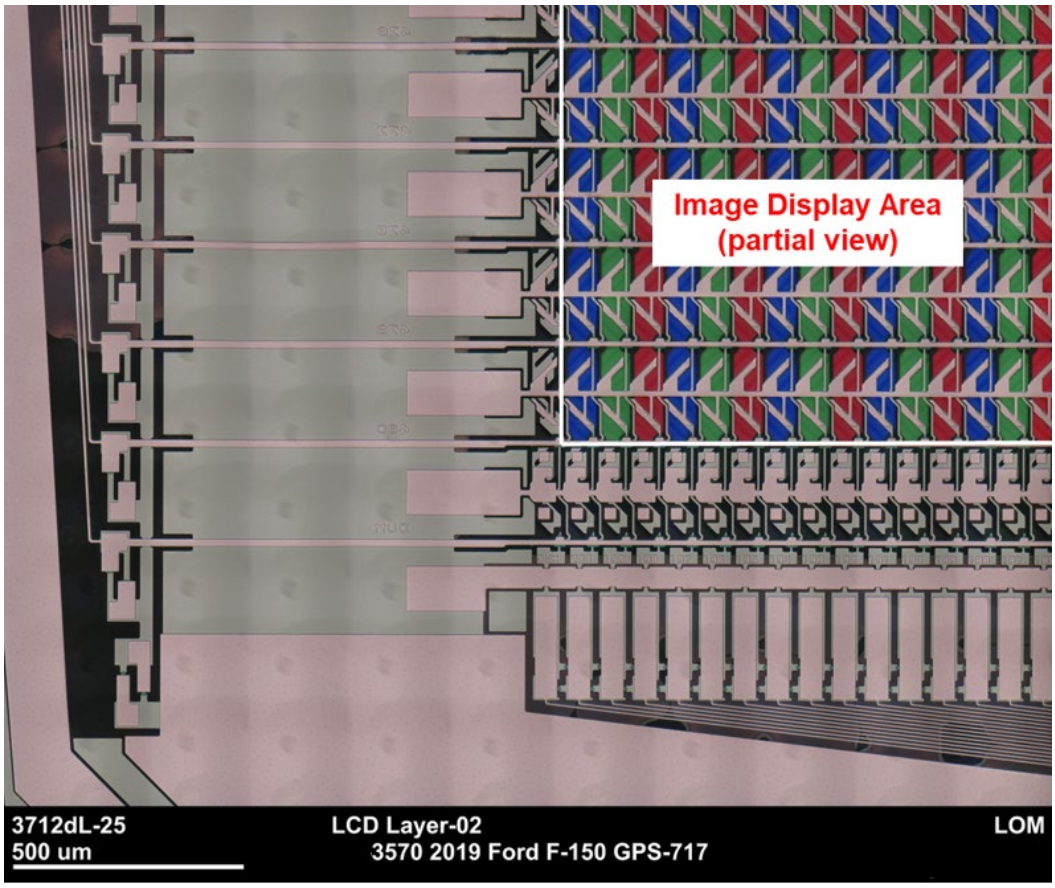
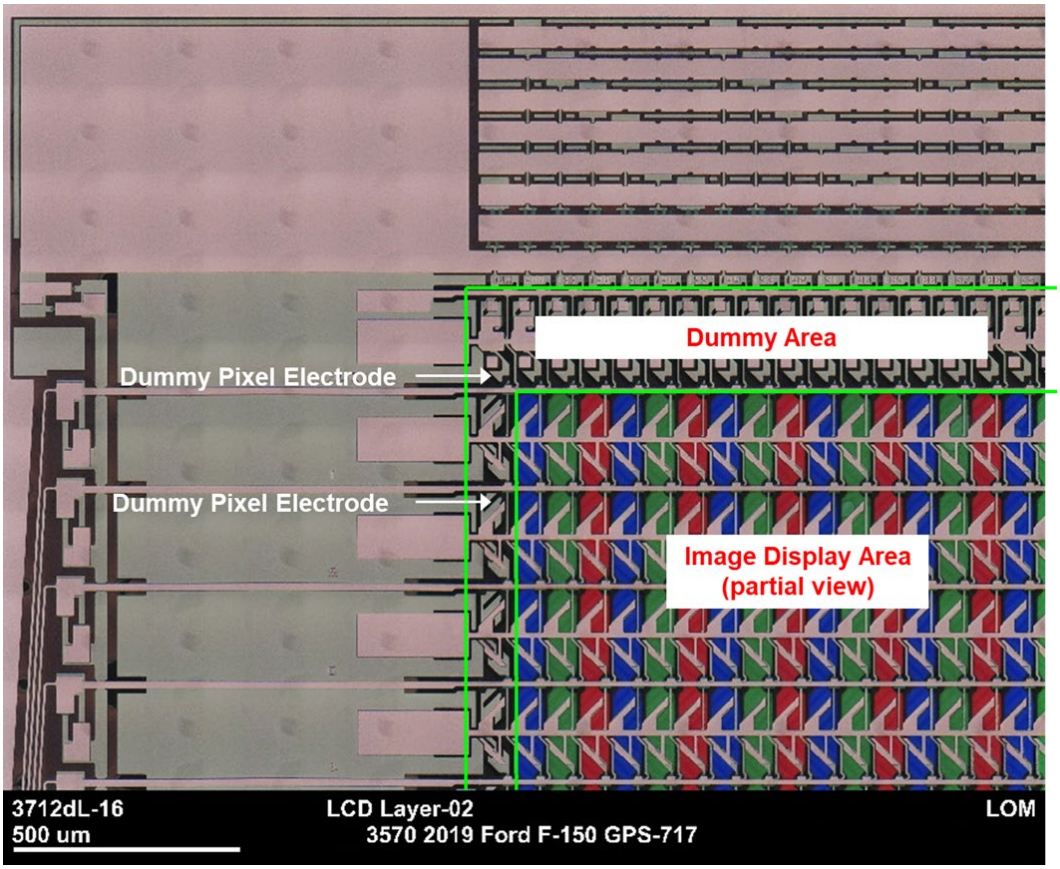
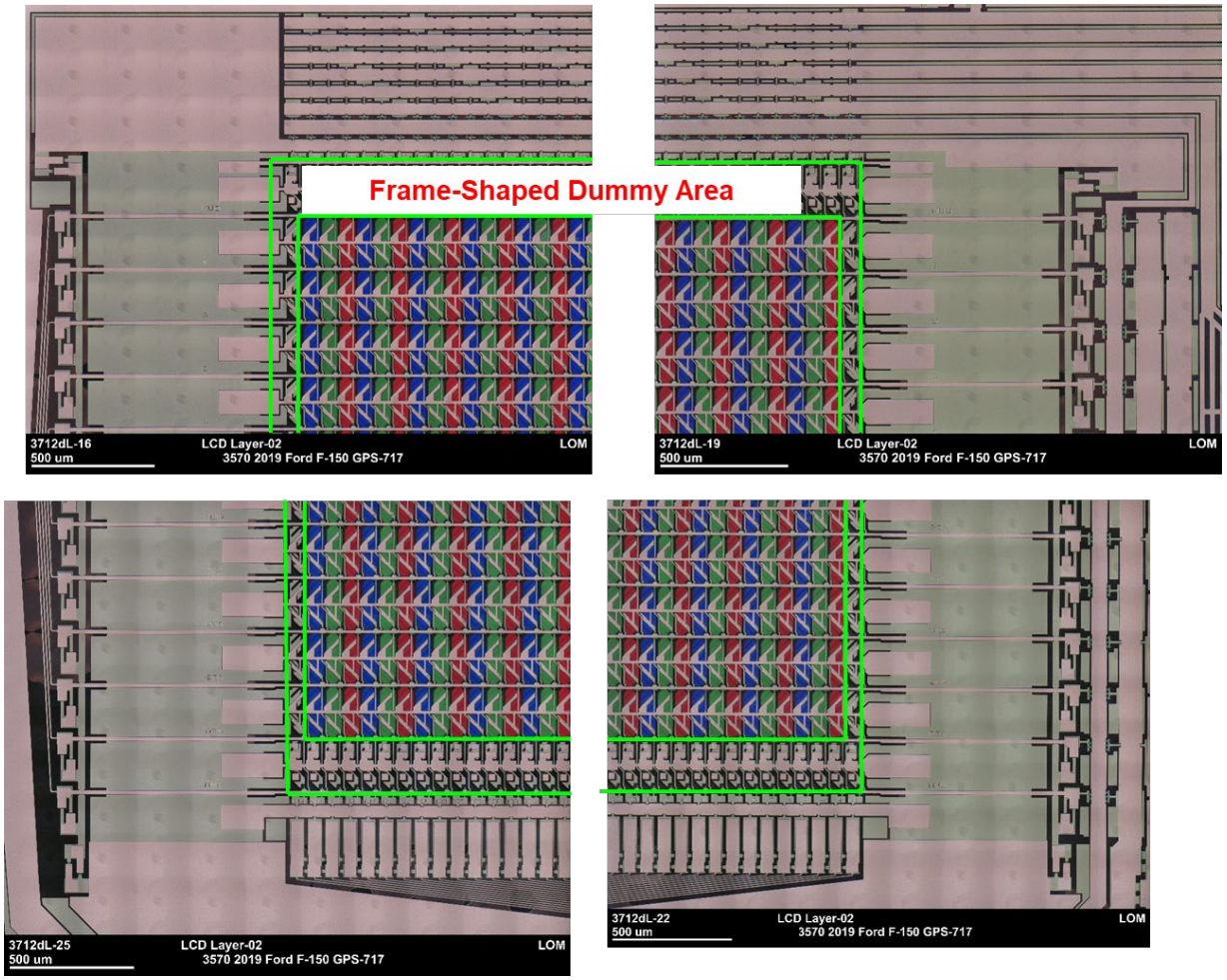


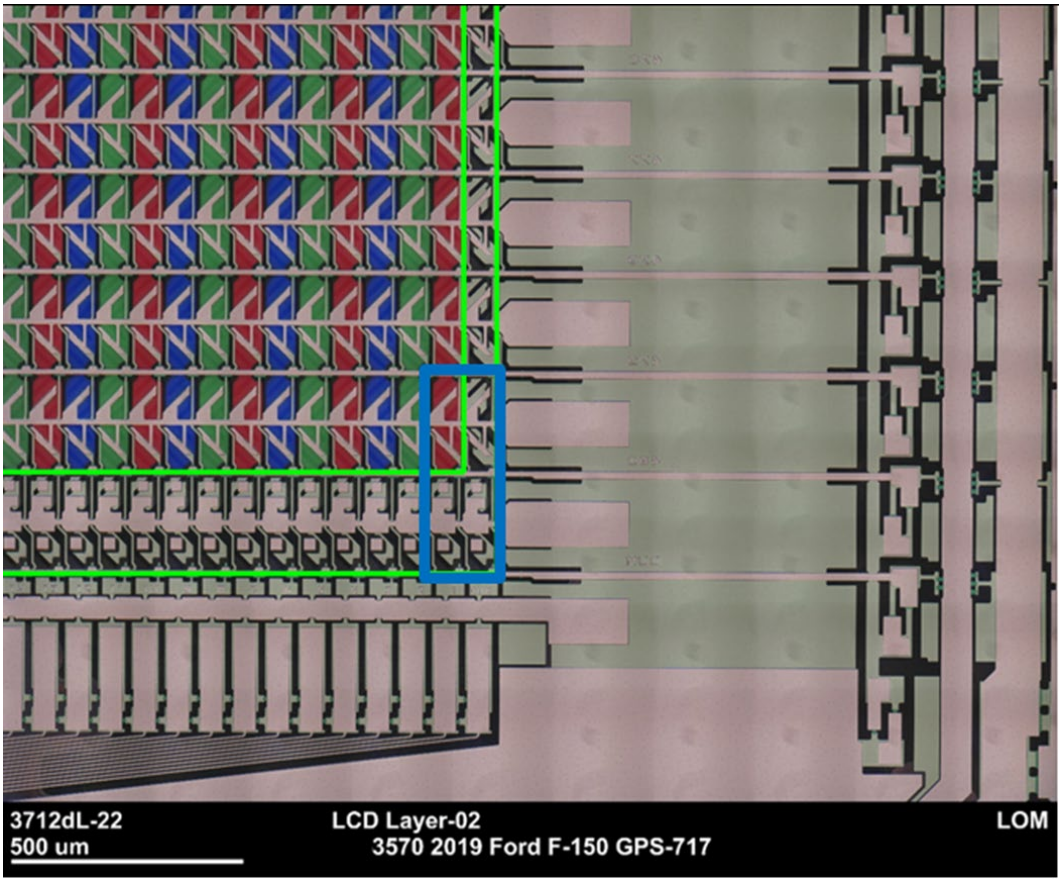
Image Display Area
(partial view)
3712dL-25
500 um
LCD Layer-02
3570 2019 Ford F-150 GPS-717
LOM

88. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise a dummy area where a second set of pixel electrodes among the plurality of pixel electrodes is located, the dummy area having a frame-like shape and surrounding the image display area.

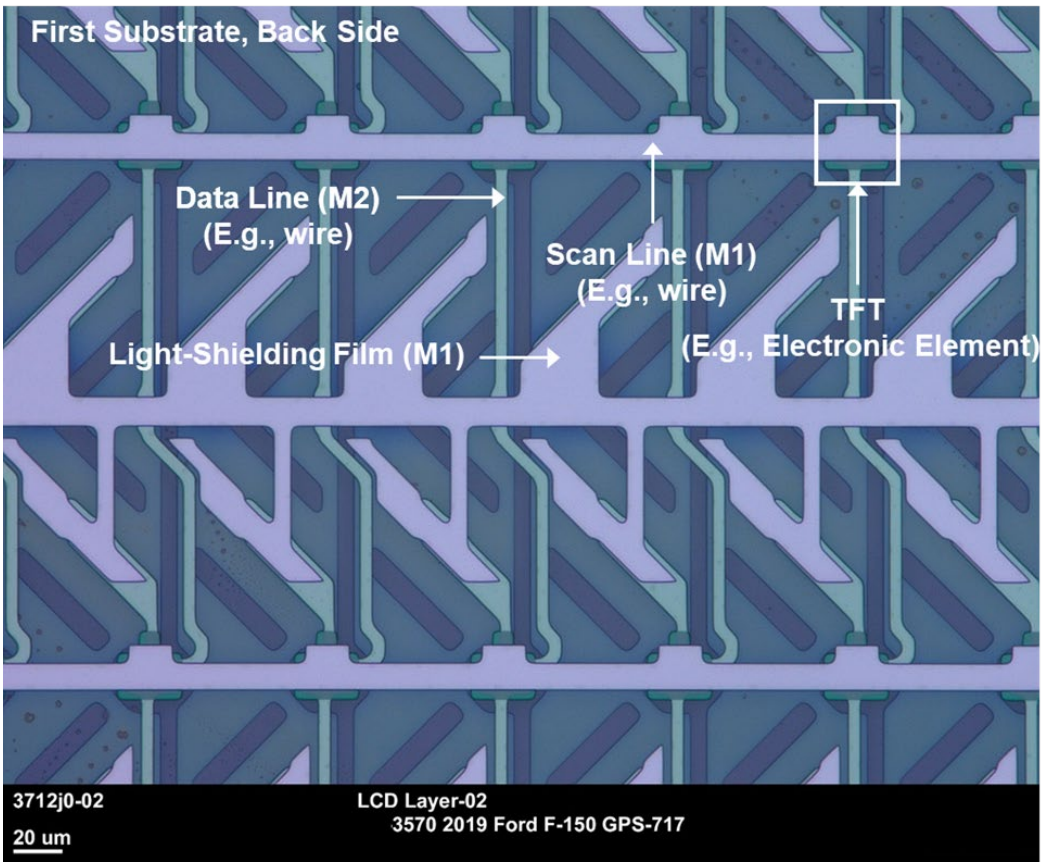


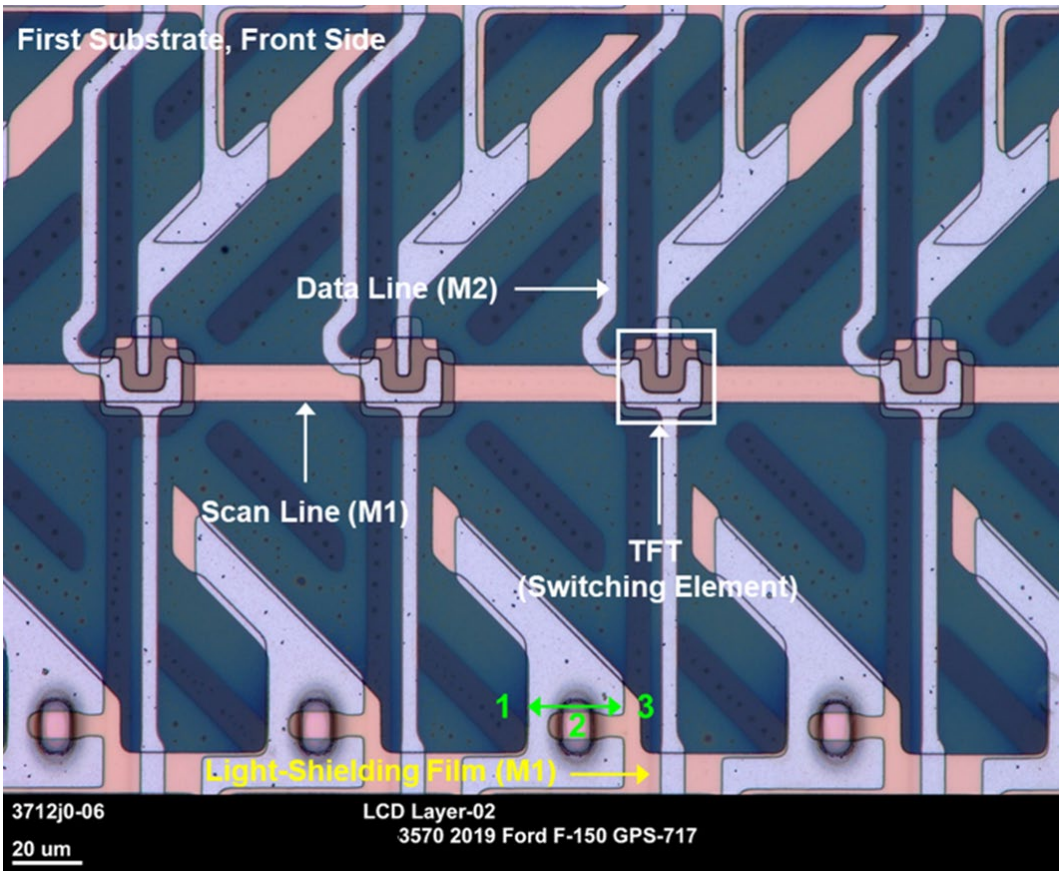


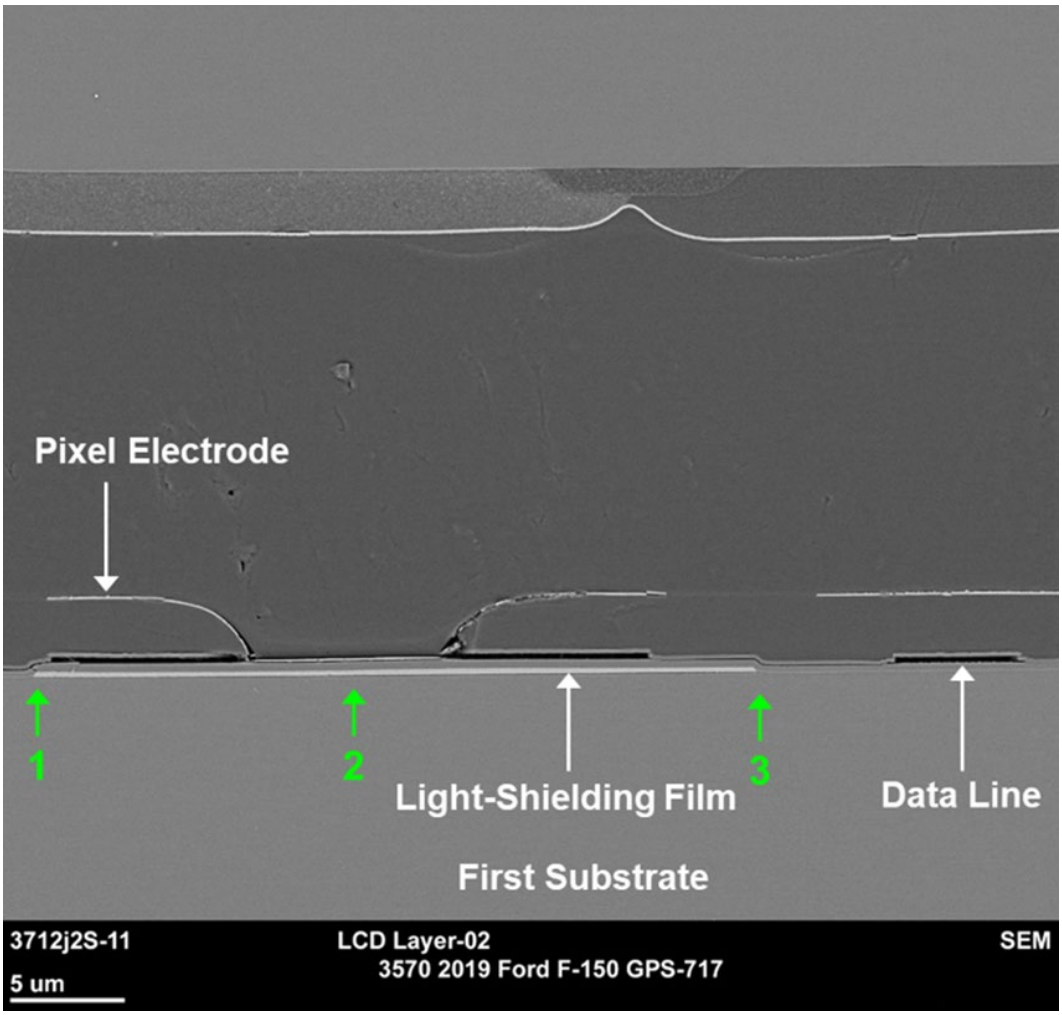
89. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise a dummy-pixel light-shielding film that covers at least part of opening regions of the pixel electrodes that function as dummy pixel electrodes being provided on the substrate.


3712dL-22
500 um
LCD Layer-02
3570 2019 Ford F-150 GPS-717
LOM

90. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5DZ04J Info-GPS-TV LCD panel in the 2019 Ford F-150, comprise the dummy-pixel light-shielding film being formed on a lower layer side of the at least one of wires and electric elements.




First Substrate, Front Side
Data Line (M2)
Scan Line (M1)
TFT
(Switching Element)
1
2
3
Light-Shielding Film (M1)
3712j0-06
20 um
LCD Layer-02
3570 2019 Ford F-150 GPS-717



91. Although the three images above correspond to pixels in the image display area rather than the dummy area, the orientation of light-shielding film and wires/electrical elements would be the same in the dummy area because the light-shielding film in both the dummy area and pixel display area is part of Metal 1 (the first metal deposition layer), and the wires and electronic elements are part of Metal 2 (the second metal deposition layer).

92. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the '353 patent and the infringement alleged herein as of on or around April 7, 2023, when Longitude provided notice to Sharp.

93. Sharp has indirectly infringed and continues to indirectly infringe the ’353 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of the ’353 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

94. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’353 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’353 patent.

95. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

96. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’353 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

97. Sharp has induced others’ direct infringement despite actual notice that the Accused Instrumentalities infringe the ’353 patent. As of at least April 7, 2023, Sharp knew that the induced conduct would constitute infringement—and intended that

infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

98. The above-described acts of infringement have caused injury and damage to Longitude.

99. Sharp's infringement has been willful.

100. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 7,705,948

101. Pursuant to 35 U.S.C. § 282, the '948 patent is presumed valid.

102. Sharp has directly infringed and continues to directly infringe one or more claims of the '948 patent, in violation of 35 U.S.C. § 271(a).

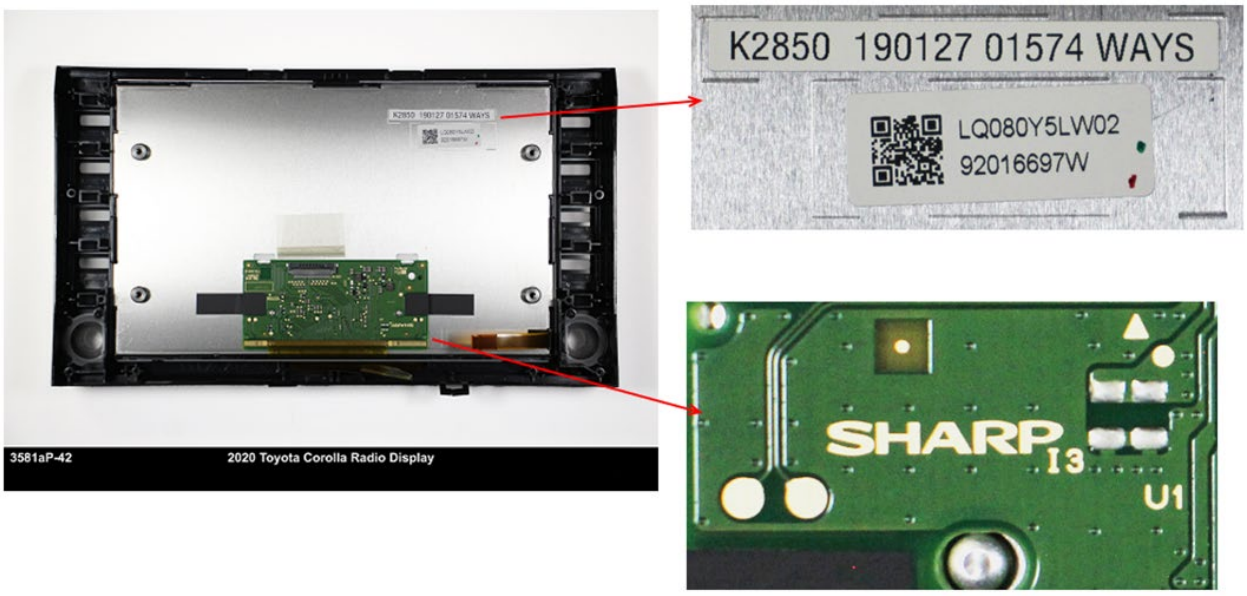
103. The Accused Instrumentalities directly infringe at least claims 1, 5, and 6 of the '948 patent.

104. Paragraphs 106-120 describe the manner in which the Accused Instrumentalities infringe claim 1 of the '948 patent, by way of the exemplary Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla. Longitude's allegations of infringement are not limited to claim 1 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement

contentions.

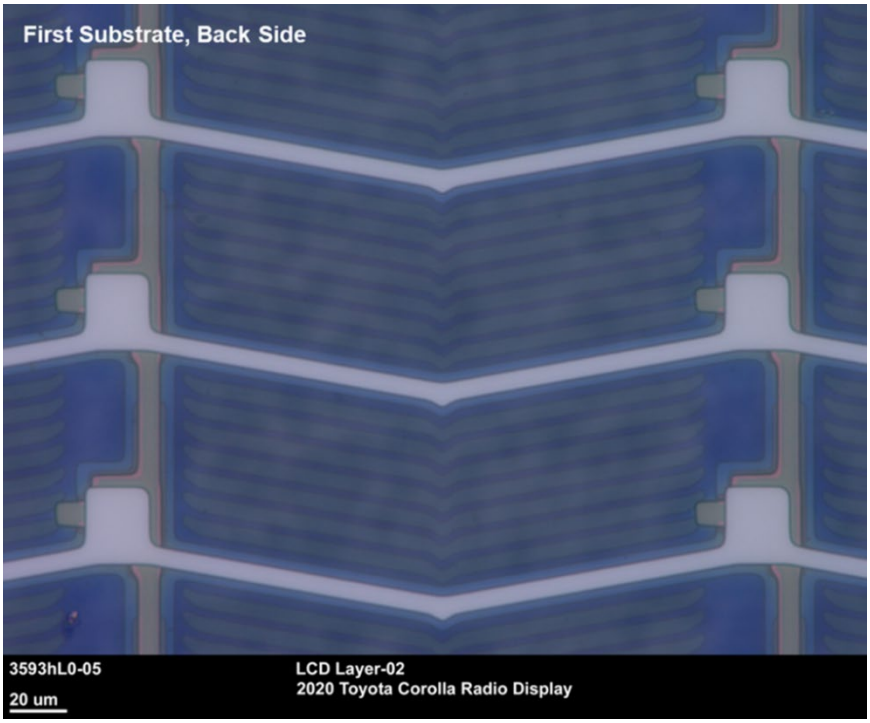
105. On information and belief, the Accused Instrumentalities, which include at least the Sharp LQ088K5RX10A LCD panel in the 2019 BMW 430i, the Sharp LS103K5LX01 LCD panel in the 2021 Mazda CX-9, and the Sharp LS120M5LX02A LCD panel in the 2021 Ford F-150, are in relevant part substantially similar to the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, in particular with regard to the manner in which the Accused Instrumentalities include upper and lower electrode layers formed on a common substrate and separated by an insulating layer, the upper electrode layer having slits, and the edge portions of the slits having first and second curved portions where the second curved portions are smaller than the first curved portions, and where the second curved portions further include a projecting portion at their distal end. Paragraphs 106-120 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

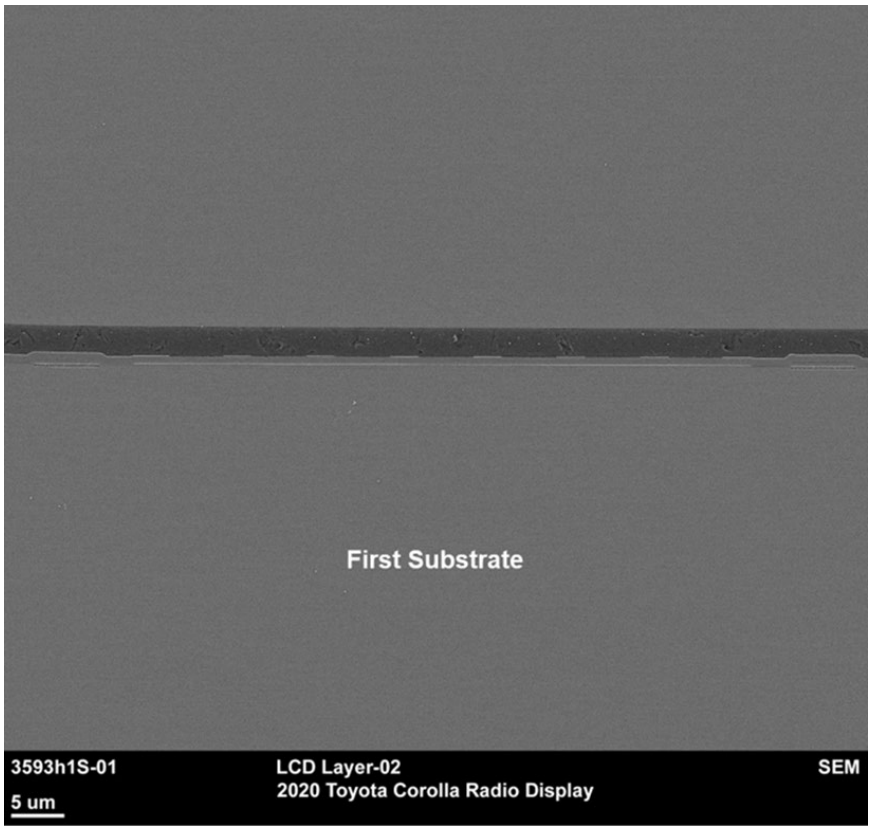
106. The LQ080Y5LW02 LCD panel is a Sharp panel, as indicated by the "Sharp" logo on the printed circuit board affixed to the back of the panel:



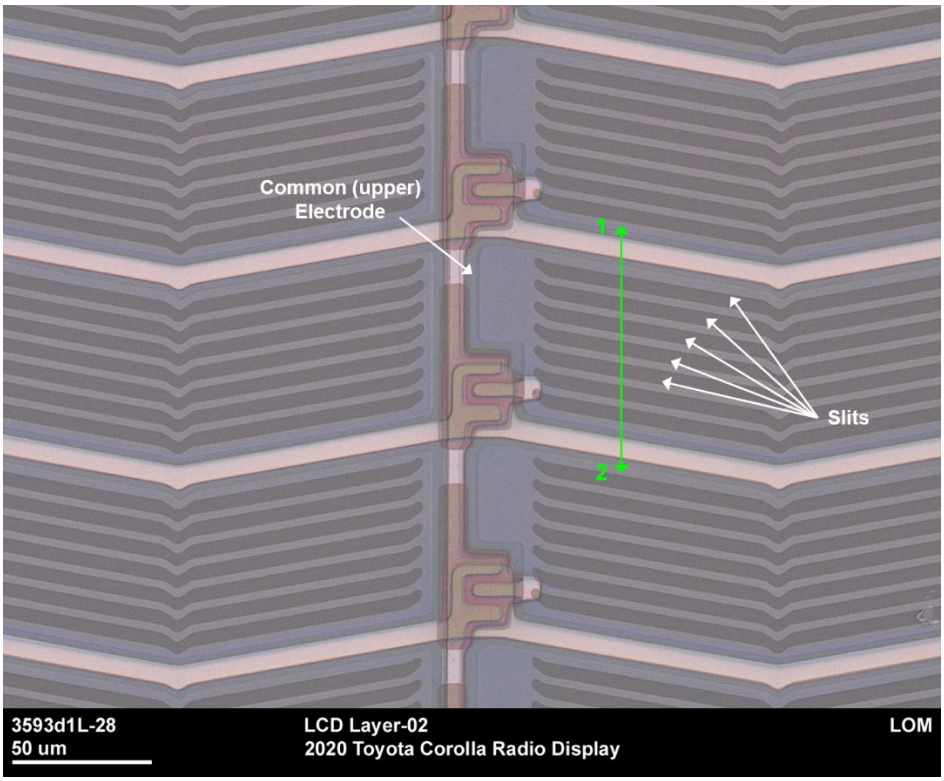
107. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise a liquid crystal display device. The devices comprise LCD pixels that are used to display images made up of optical light.

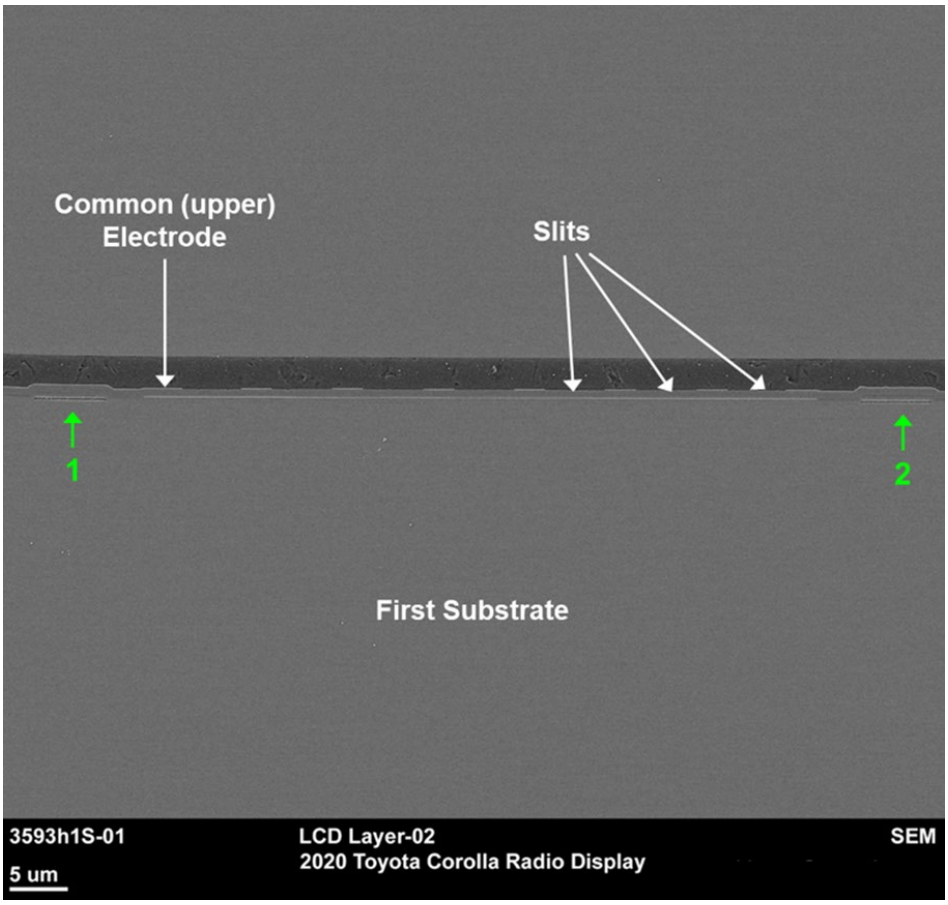
108. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise a substrate.



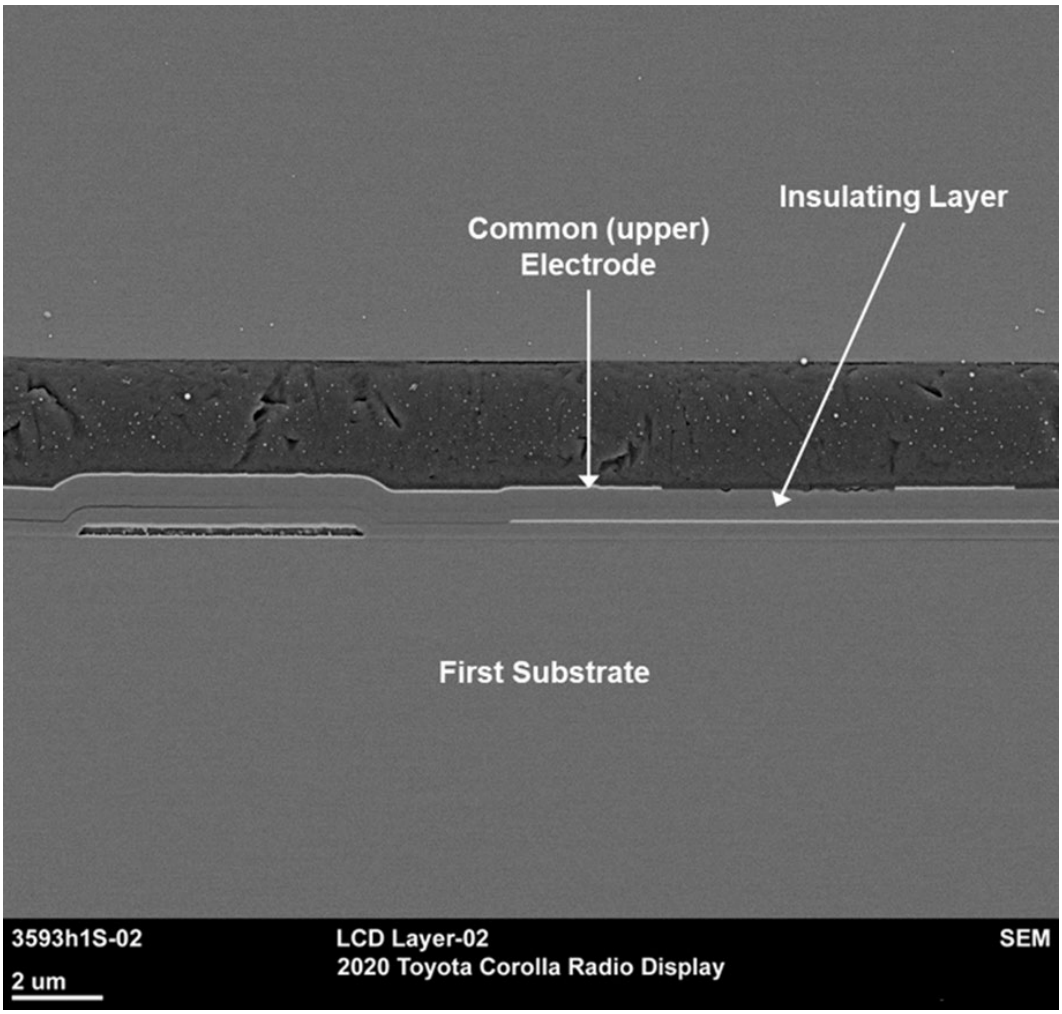


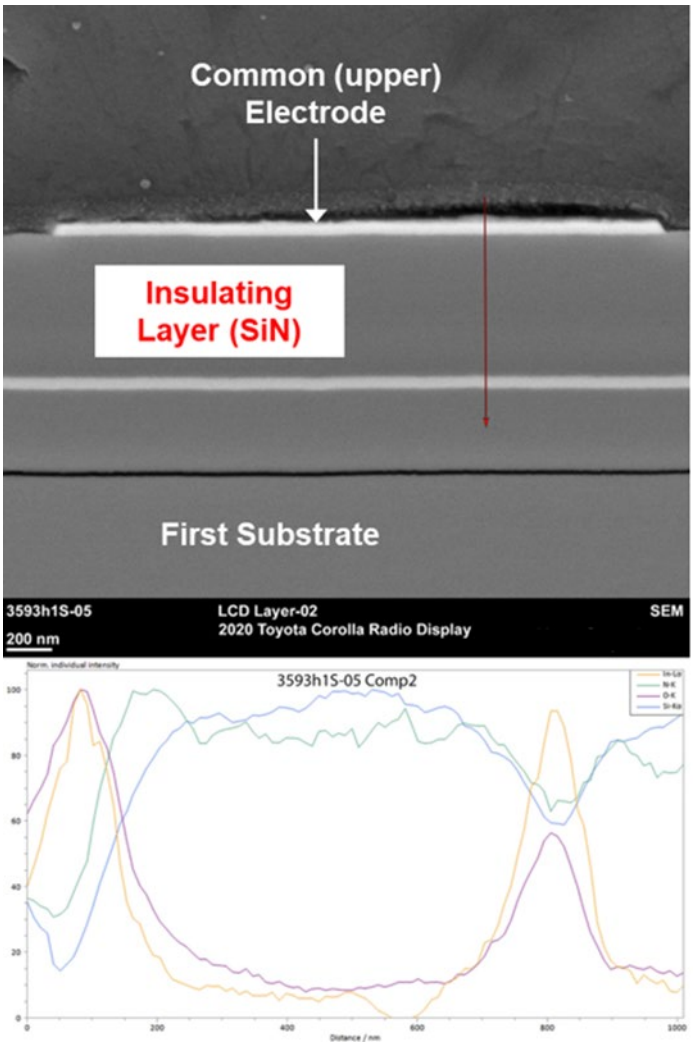
109. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise an upper electrode layer formed on the substrate, the upper electrode layer having slits.


Common (upper)
Electrode
1
2
Slits
3593d1L-28
50 um
LCD Layer-02
2020 Toyota Corolla Radio Display
LOM

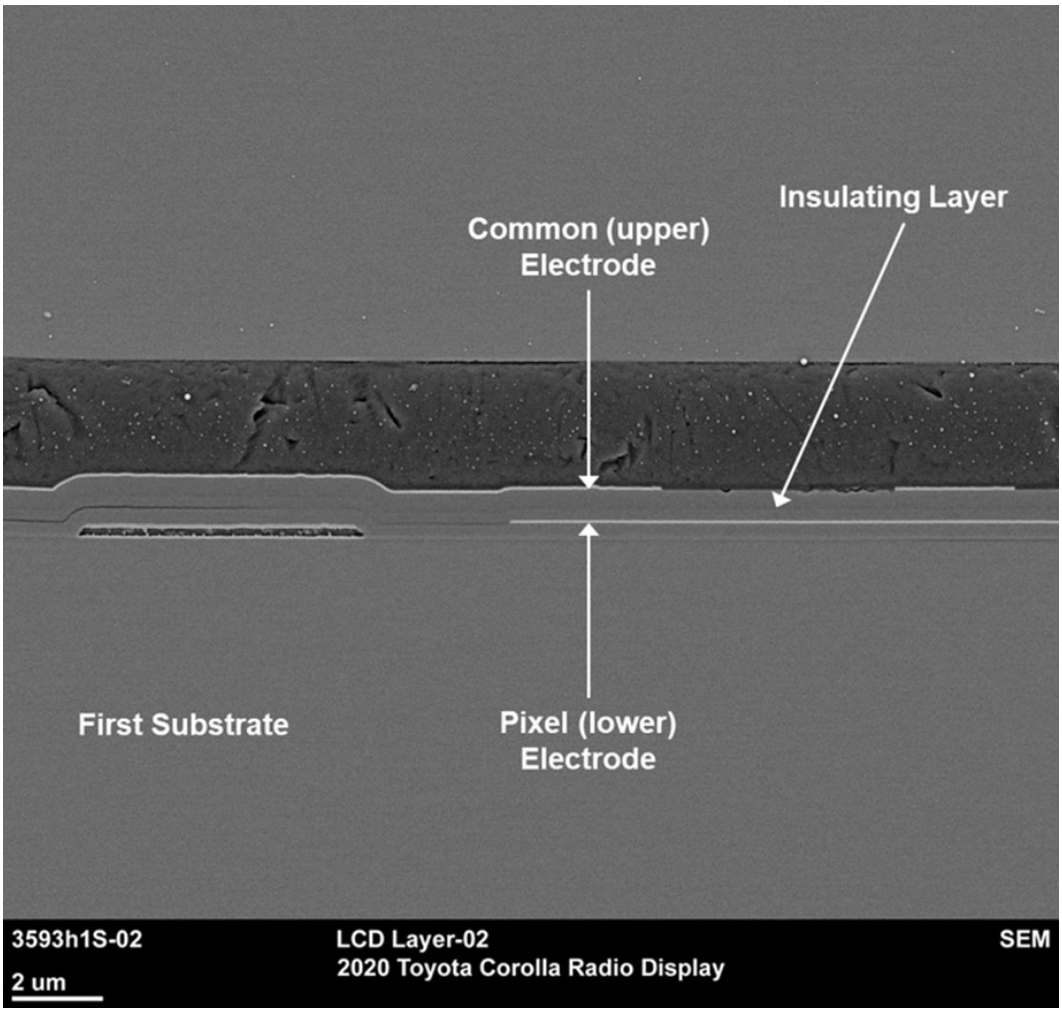

Common (upper)
Electrode
Slits
1
2
First Substrate
3593h1S-01
5 um
LCD Layer-02
2020 Toyota Corolla Radio Display
SEM

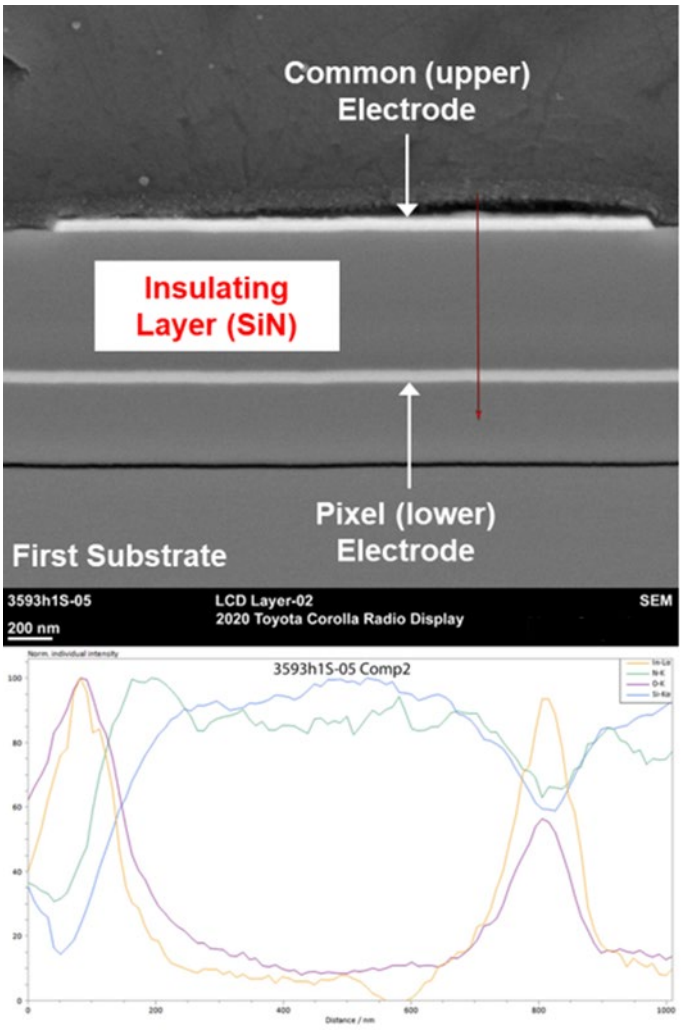
110. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise an insulating layer formed between the substrate and the upper electrode layer.





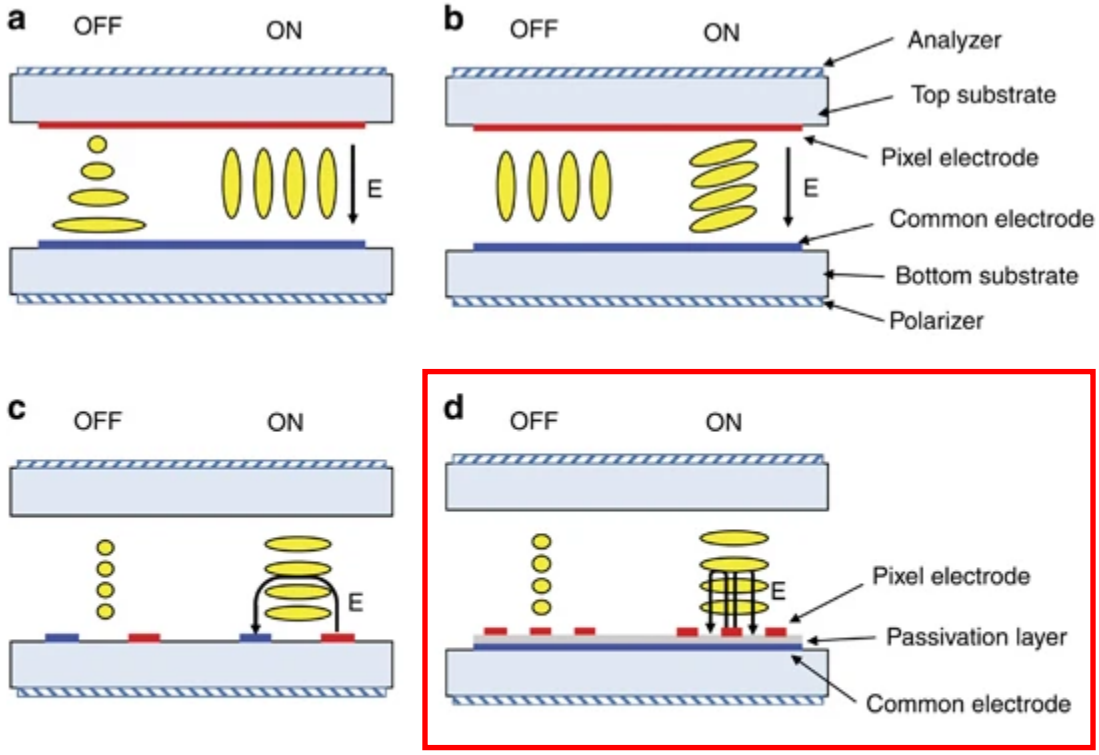
111. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise a lower electrode layer formed between the substrate and the insulating layer.


Insulating Layer
Common (upper)
Electrode
First Substrate
Pixel (lower)
Electrode
3593h1S-02
2 um
LCD Layer-02
2020 Toyota Corolla Radio Display
SEM



112. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise the slits described *supra*, the slits allowing for application of a voltage between the upper electrode layer and the lower electrode layer, the voltage driving liquid crystal molecules. It is well-established that the operating mechanism for fringe-field switched LCD panels, such as those typically used in auto panels, is an electric field generated by the voltage drop between positively and negatively charged electrodes placed opposite each other. More particularly, the slits in one electrode (either the pixel or the common electrode) facilitate

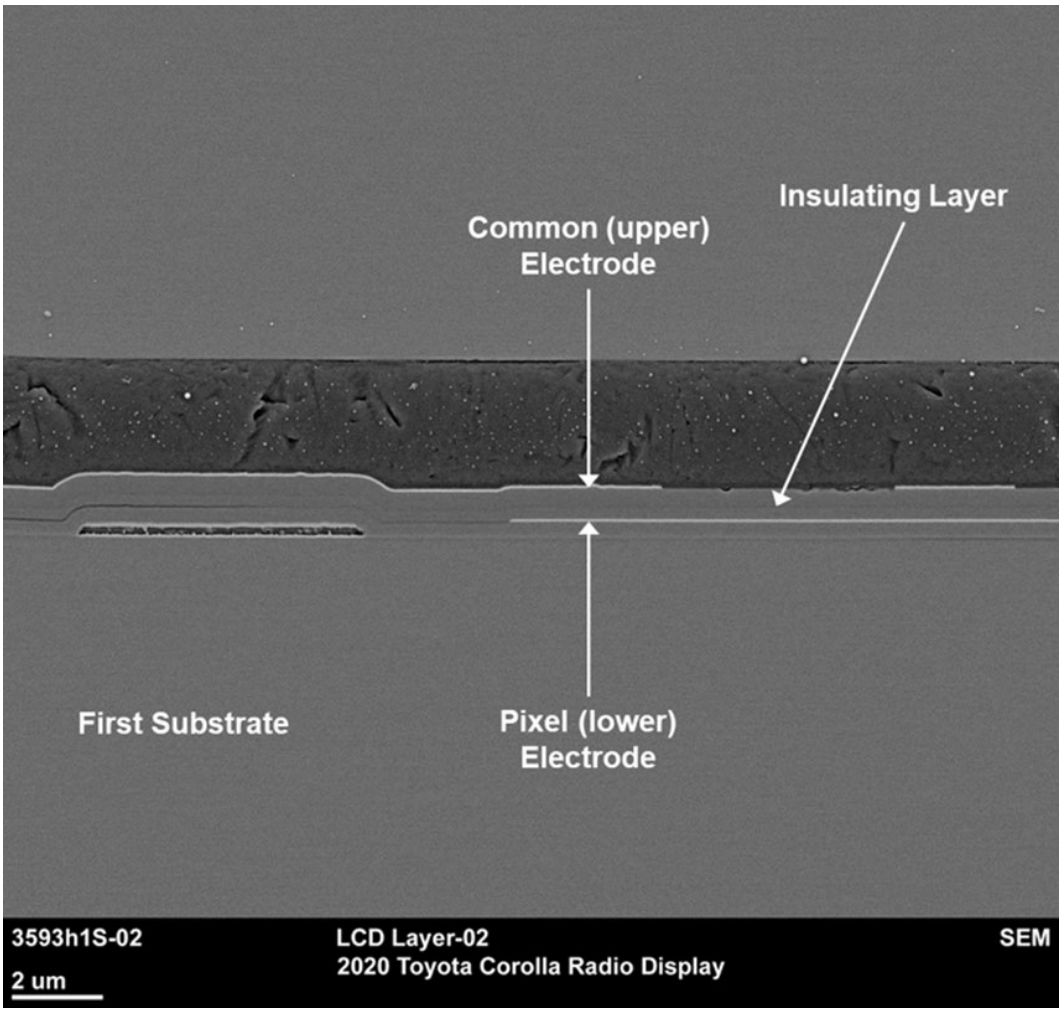
the generation of a lateral electric field along which the LC molecules will align when the voltage is applied, as shown for "FFS mode" (d) below:



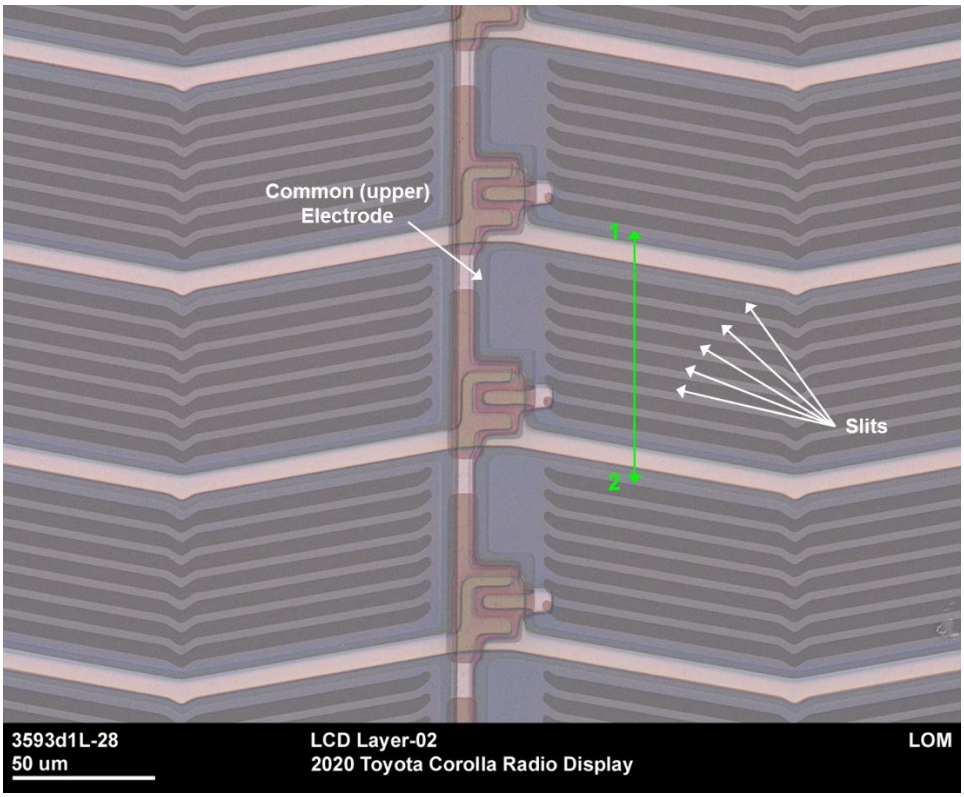
Schematic diagram of the (**a**) TN mode, (**b**) VA mode, (**c**) IPS mode and (**d**) FFS mode. The LC director orientations are shown in the voltage-off (left) and voltage-on (right) states.

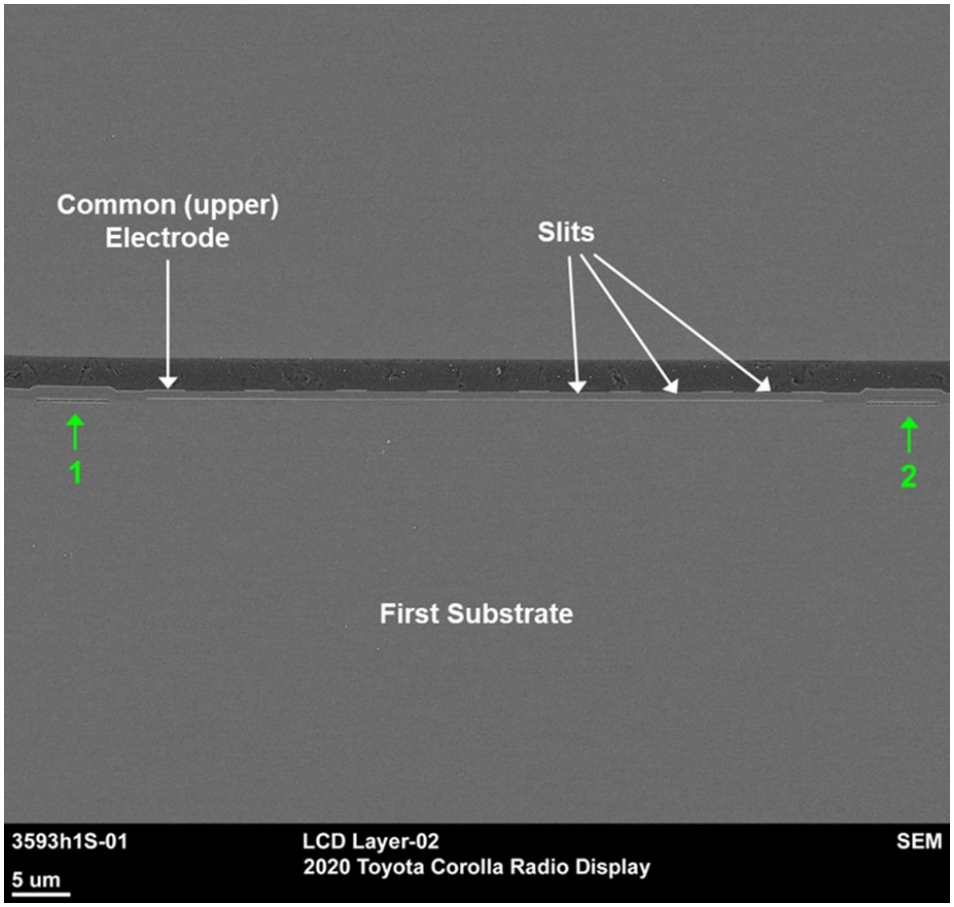
https://www.nature.com/articles/lsa2017168/figures/2.

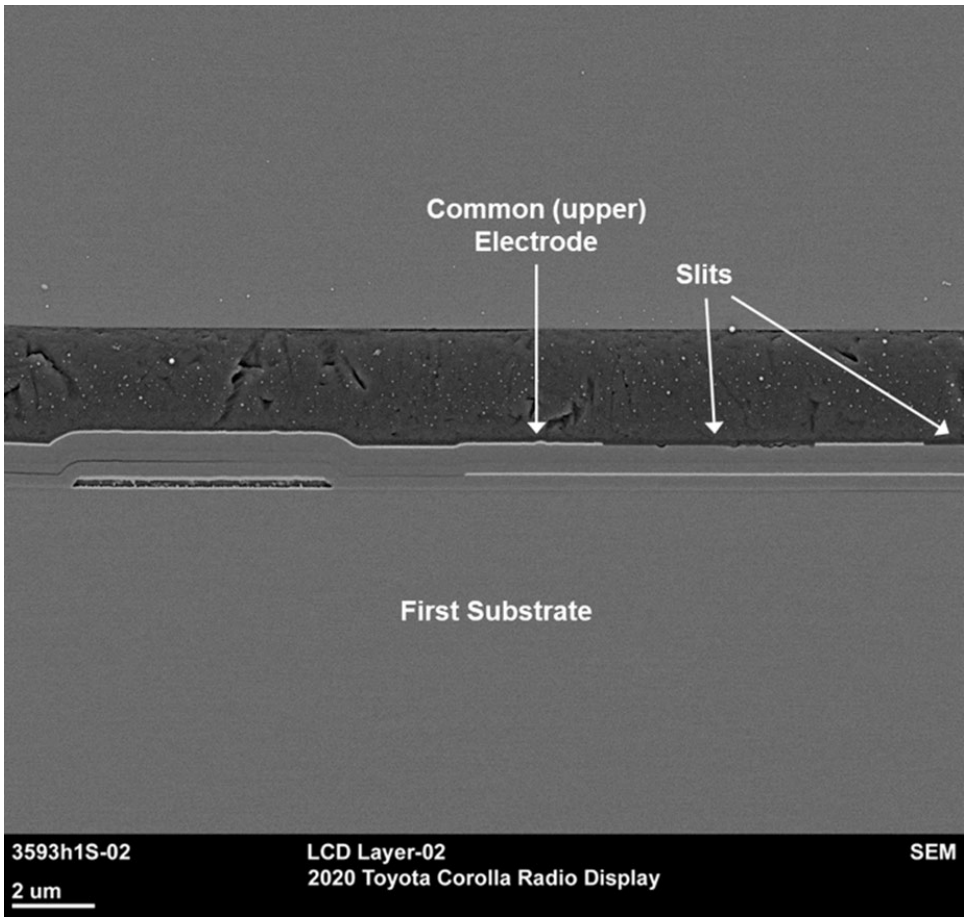
113. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise the upper electrode layer and the lower electrode layer formed on a same substrate via the insulating layer.

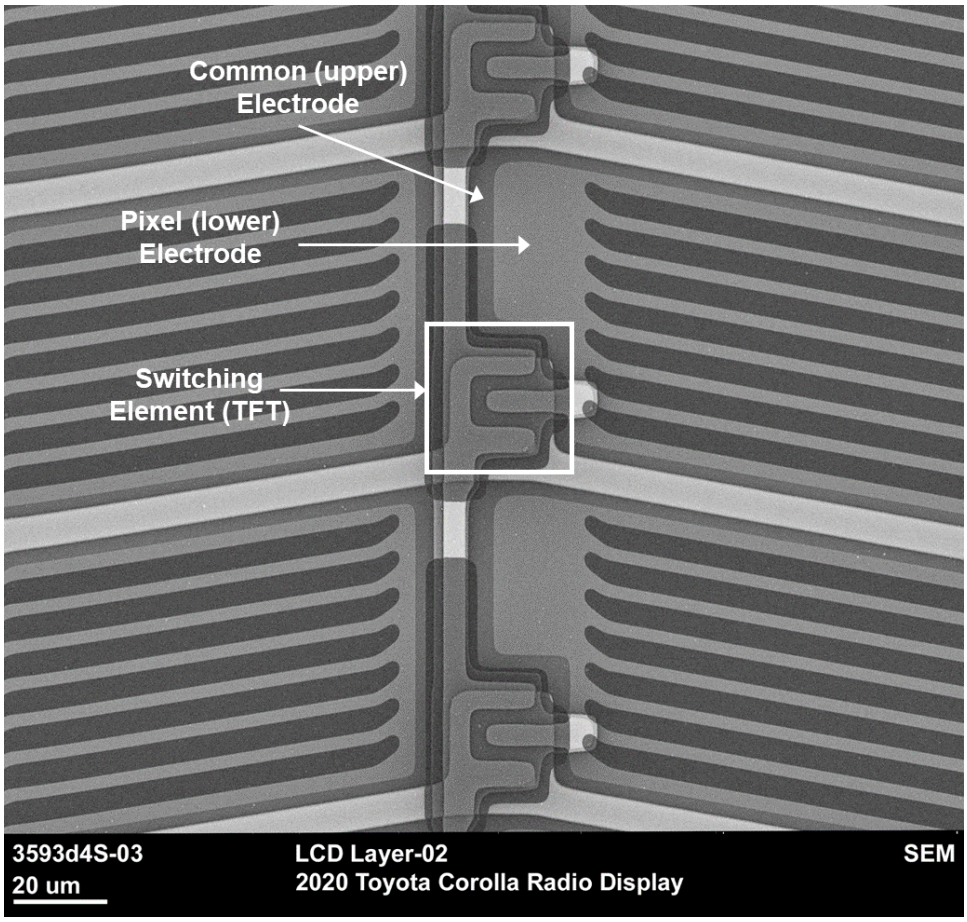


114. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise the insulating layer described *supra*, that insulating layer comprising slits formed on the upper electrode layer for applying voltage between the upper electrode layer and the lower electrode layer and for driving liquid crystal molecules.

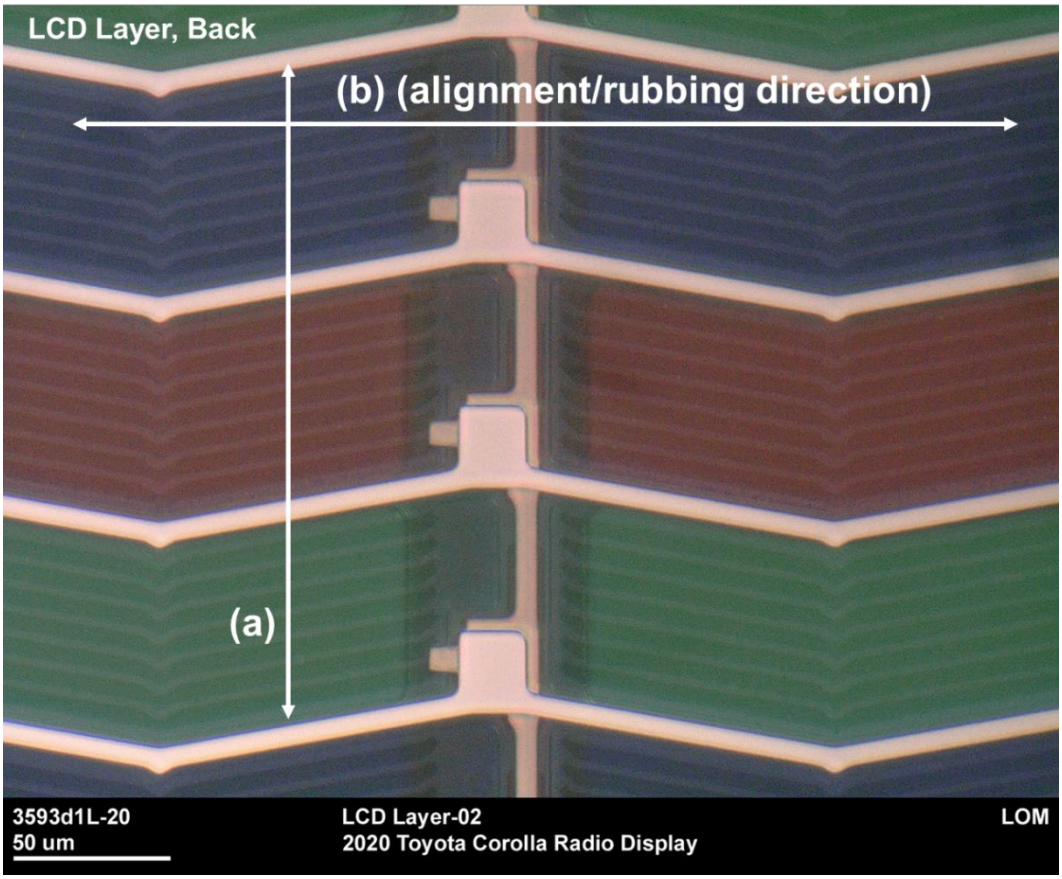

Common (upper)
Electrode
1
2
Slits
3593d1L-28
50 um
LCD Layer-02
2020 Toyota Corolla Radio Display
LOM


Common (upper)
Electrode
Slits
1
2
First Substrate
3593h1S-01
5 um
LCD Layer-02
2020 Toyota Corolla Radio Display
SEM

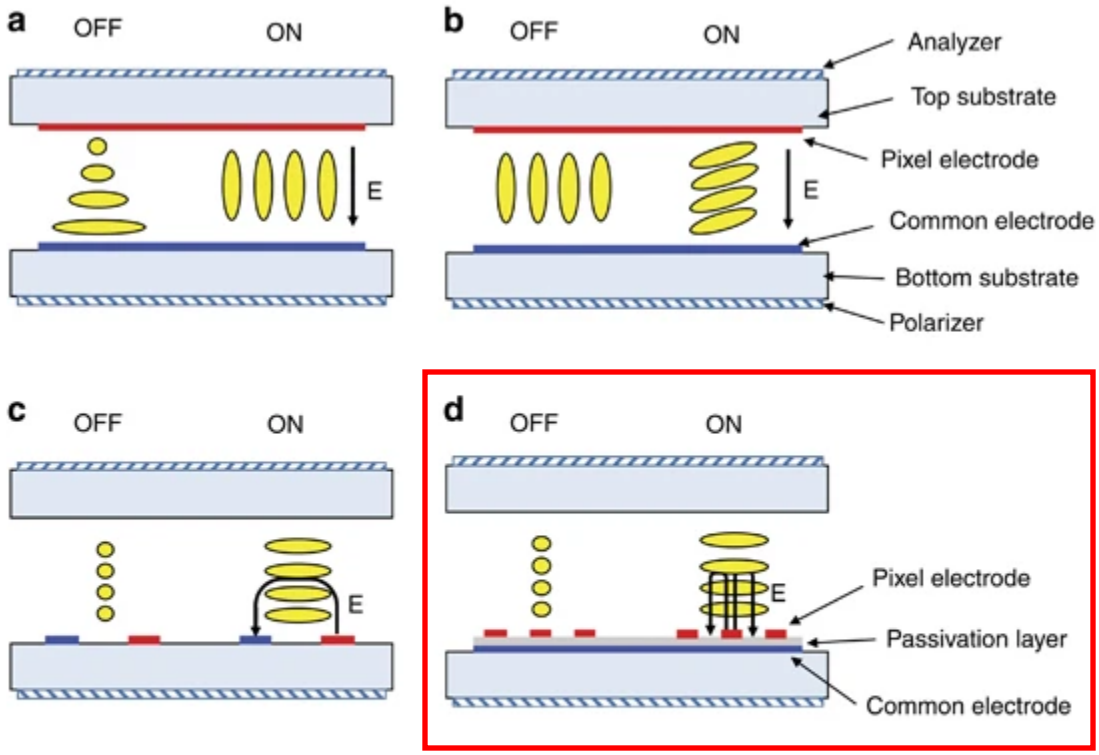

Common (upper)
Electrode
Slits
First Substrate
3593h1S-02
2 um
LCD Layer-02
2020 Toyota Corolla Radio Display
SEM



115. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise a rubbing direction that runs east-west—along direction (b):



116. Aligning the molecules in this way—in the plane of the substrate and roughly parallel to the slits—is well-known in the FFS art, as shown in the red boxed portion of the figure below, because it allows the LCD molecules to be rotated in a direction orthogonal to the slits when an electric field is activated between the pixel electrode and common electrode, as shown in (d) ("FFS mode") below:

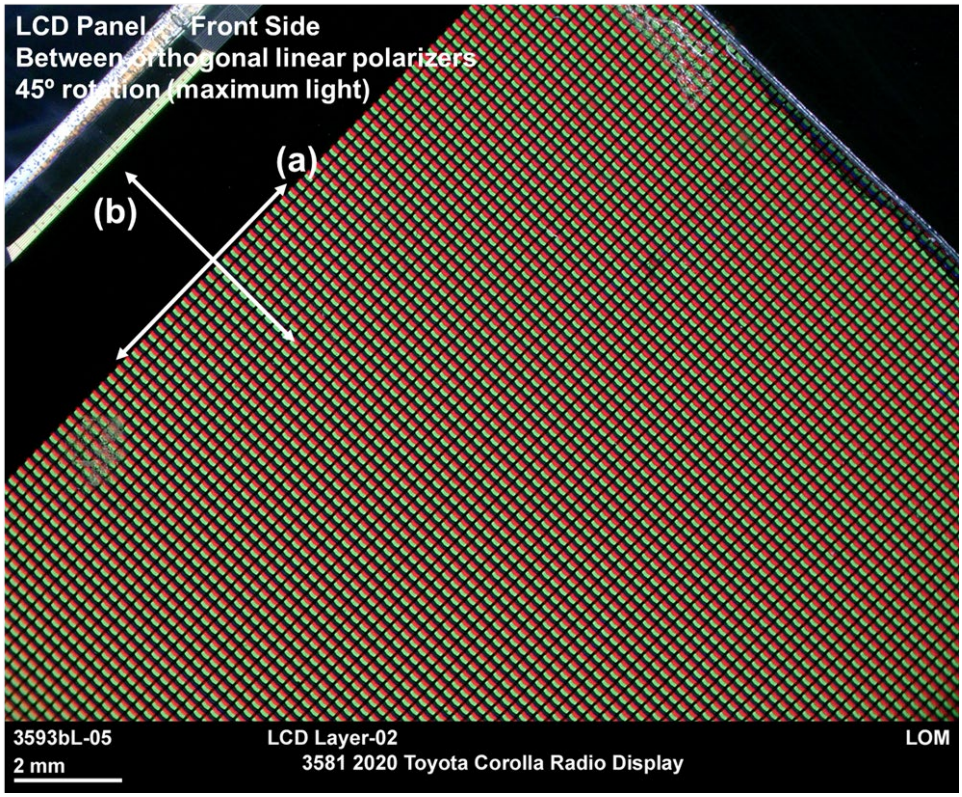


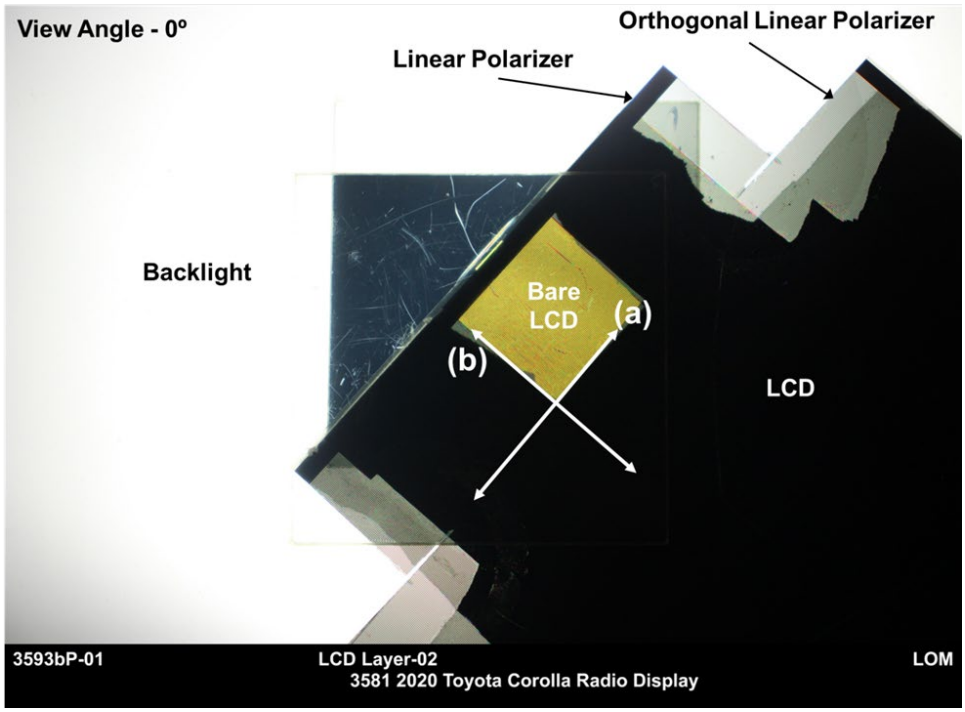
Schematic diagram of the (**a**) TN mode, (**b**) VA mode, (**c**) IPS mode and (**d**) FFS mode. The LC director orientations are shown in the voltage-off (left) and voltage-on (right) states.

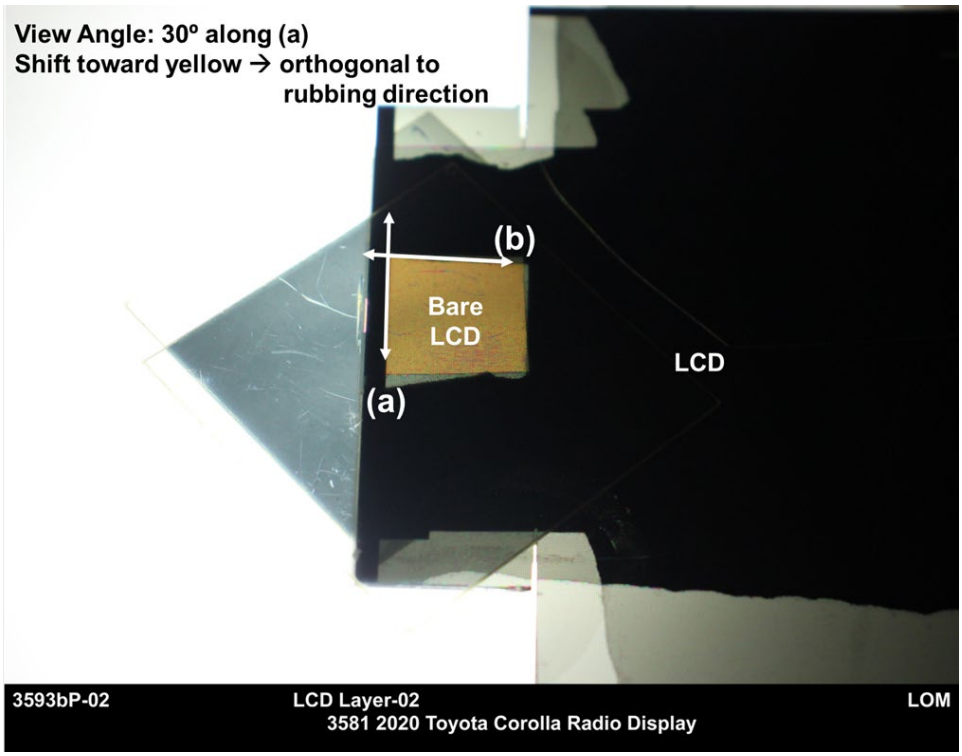
https://www.nature.com/articles/lsa2017168/figures/2.

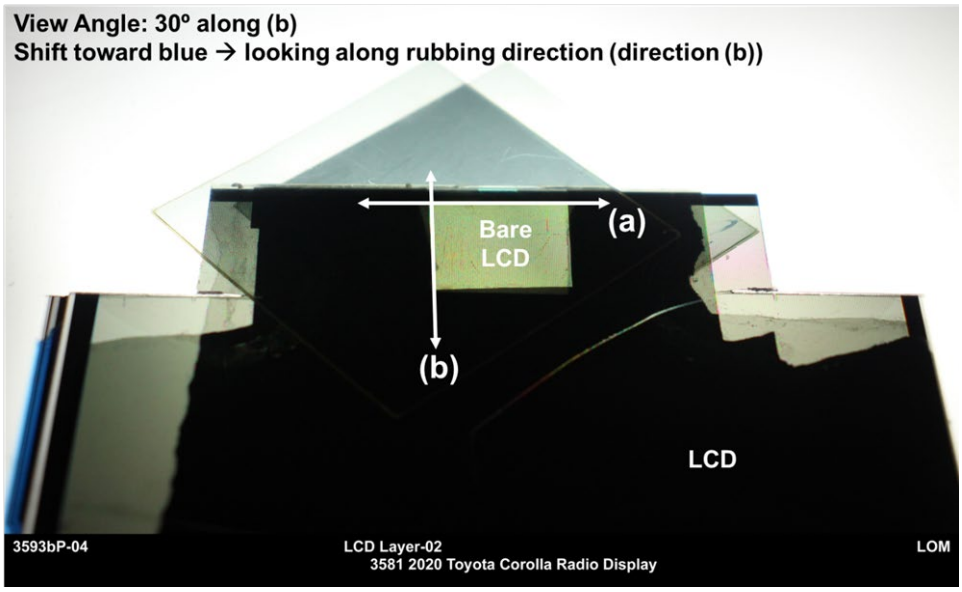
117. Reverse engineering of the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla further shows that the rubbing direction is the east-west line in the image labeled 3593d1L-20, above. When placed between two orthogonal polarizers and against a backlight, the polarized LCD panel will appear yellower when viewed perpendicular to the rubbing direction and at an angle of roughly 30 degrees relative to the plane of the panel; the panel will appear bluer when viewed along the rubbing direction and at an angle of roughly 30 degrees relative to the plane of the panel. As shown below, the Sharp LQ080Y5LW02 LCD panel appears bluer when viewed along direction (b), confirming

that (b) is the rubbing direction.



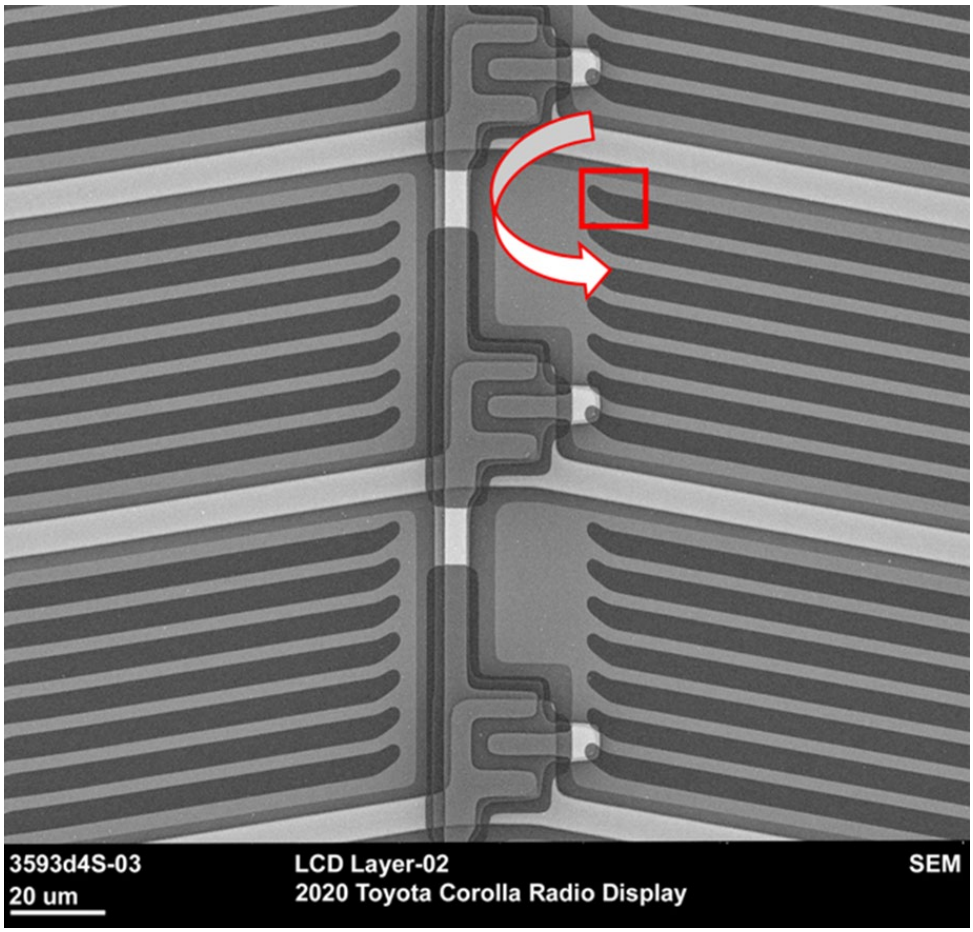


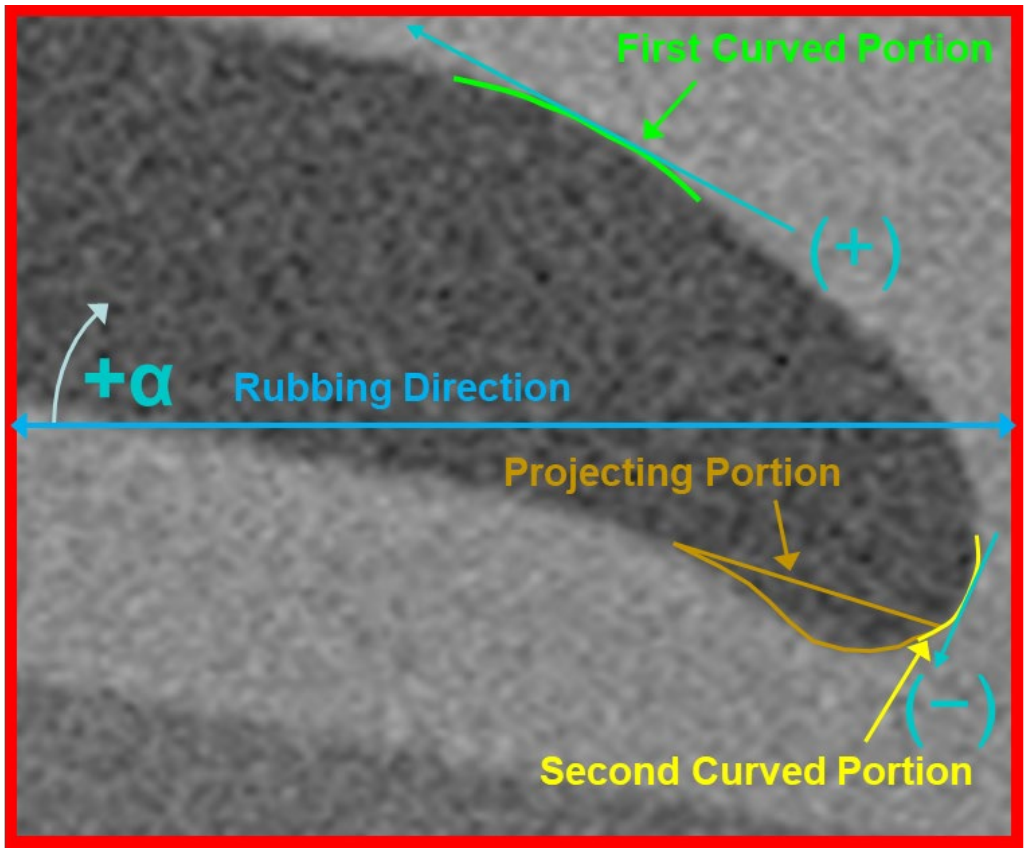




118. On information and belief, Sharp either rubs the TFT substrate to set the alignment direction of the LC molecules, or uses an alternative, equivalent process such as a photoalignment process to set the direction of the LC molecules in the absence of an applied voltage between the pixel and common electrodes.

119. Sharp LCD panels and modules, including, for example, the Sharp LQ080Y5LW02 LCD panel in the 2020 Toyota Corolla, comprise edge portions of the slits each including a first curved portion the tangential direction of which at the edge portions with respect to a rubbing direction falls within a range from 0° to +90° and a second curved portion the tangential direction of which at the edge portions with respect to the rubbing direction falls within the range from 0° to −90°, where the direction toward an acute angle subtended by the long sides of the slits with respect to the rubbing direction is the positive direction, the second curved portion being smaller than the first curved portion, wherein the second curved portion includes a projecting portion, the projecting portion being located at a distal end of the second curved portion.





120. As shown in the above image, the projecting portion is located at the distal end of the second curved portion, insofar as the projecting portion extends from the lower left end of the second curved portion. As further shown in the image above, the tangential direction of the first curved portion with respect to the rubbing direction falls within a range from 0° to +90° ("(+)") and the tangential direction of the second curved portion with respect to the rubbing direction falls within a range from 0° to –90° ("(–)").

121. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the '948 patent and the infringement alleged herein as of on or around March 1, 2019, when Longitude provided notice to Sharp.

122. Sharp has indirectly infringed and continues to indirectly infringe the '948 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of

the ’948 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

123. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’948 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’948 patent.

124. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

125. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’948 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

126. Sharp has induced others’ direct infringement despite actual notice that the Accused Instrumentalities infringe the ’948 patent. As of at least March 1, 2019, Sharp knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to

induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

127. The above-described acts of infringement have caused injury and damage to Longitude.

128. Sharp's infringement has been willful.

129. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. 7,961,171

130. Pursuant to 35 U.S.C. § 282, the '171 patent is presumed valid.

131. Sharp has directly infringed and continues to directly infringe one or more claims of the '171 patent, in violation of 35 U.S.C. § 271(a).

132. The Accused Instrumentalities directly infringe at least claims 1, 17, and 19 of the '171 patent.

133. Paragraphs 135-155 describe the manner in which the Accused Instrumentalities infringe claim 1 of the '171 patent, by way of the Sharp LCD panel in the exemplary LG 70UK65 TV, model 70UK6570AUB. Longitude's allegations of infringement are not limited to claim 1 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

134. On information and belief, the Accused Instrumentalities, which include at

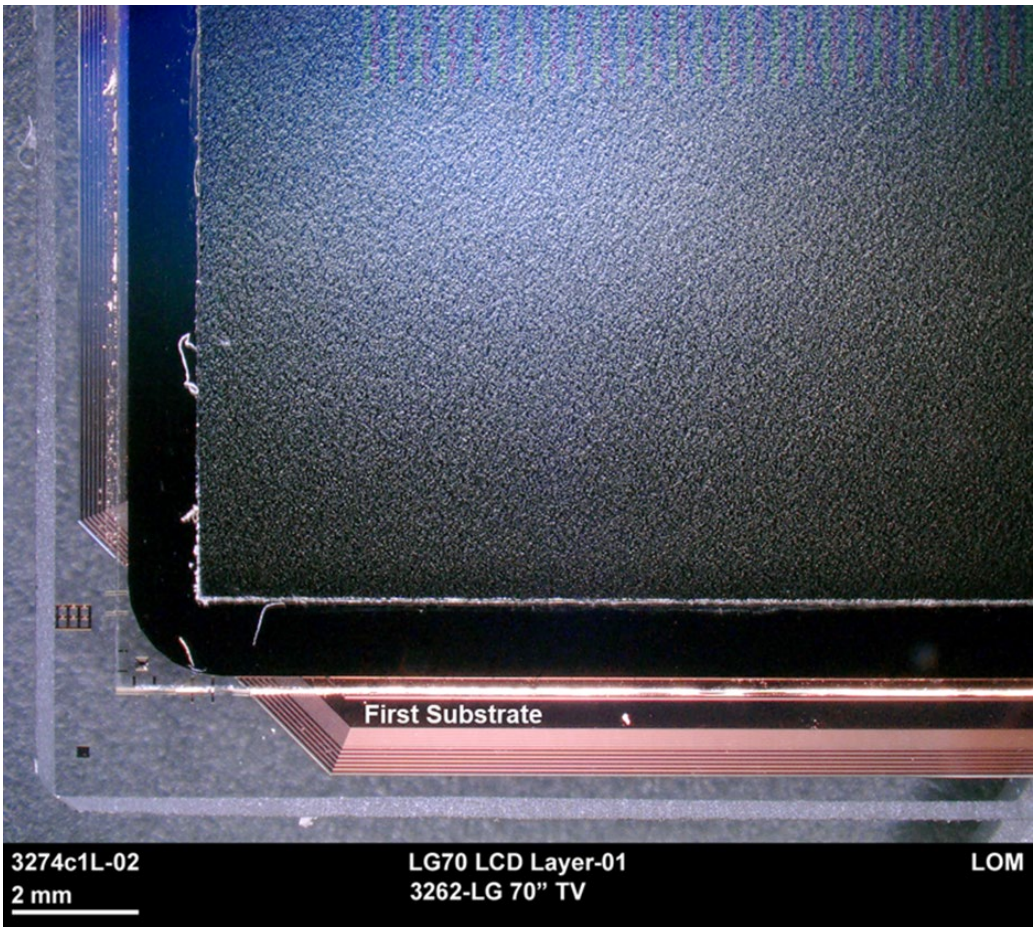
least the Sharp LCD panel in the Vizio 70-inch E70-F3 TV, are in relevant part substantially similar to the exemplary Sharp LCD panel in the LG 70UK6570AUB TV, in particular with regard to the manner in which the Accused Instrumentalities include first and second substrates with an electrooptic material disposed in between; first and second sets of scan lines; signal lines intersecting the first and second sets of scan lines; and pixels arranged in a matrix above the first substrate, each having first and second transistors connected to scan lines, signal lines, and to one another in the particular configuration described below. Paragraphs 135-155 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

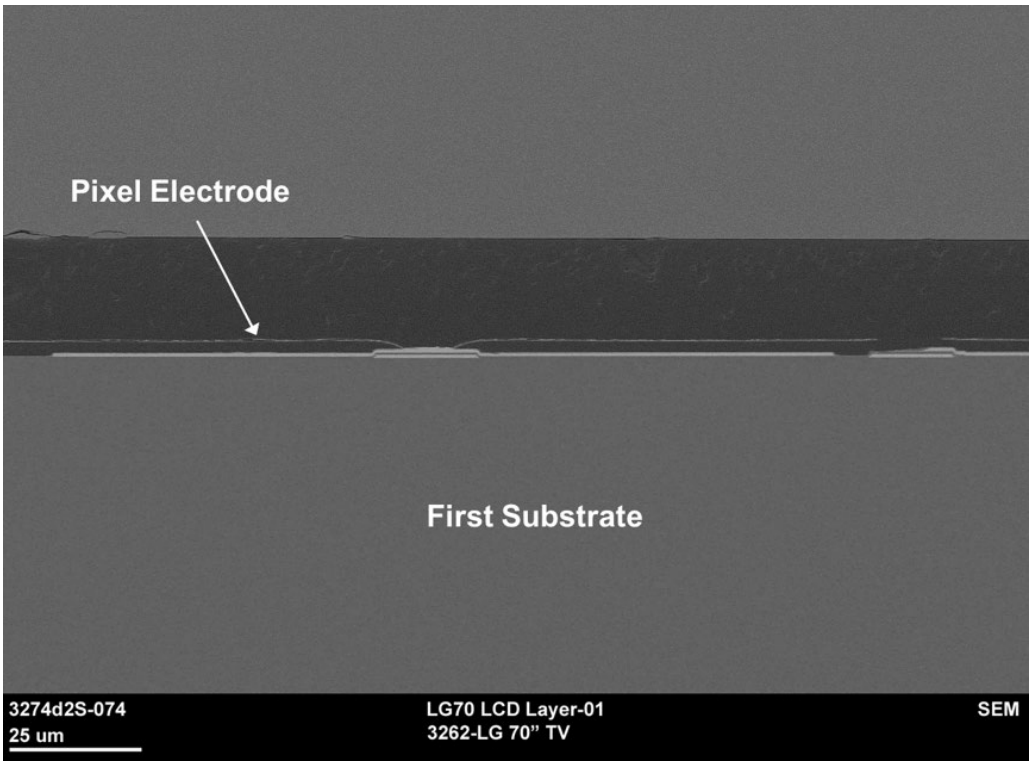
135. On information and belief, the LCD panel in the LG 70UK6570AUB TV is a Sharp LCD panel.

136. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise an electrooptic device as recited in claim 1's non-limiting preamble. The devices comprise LCD pixels driven by transistors to display images made up of optical light.

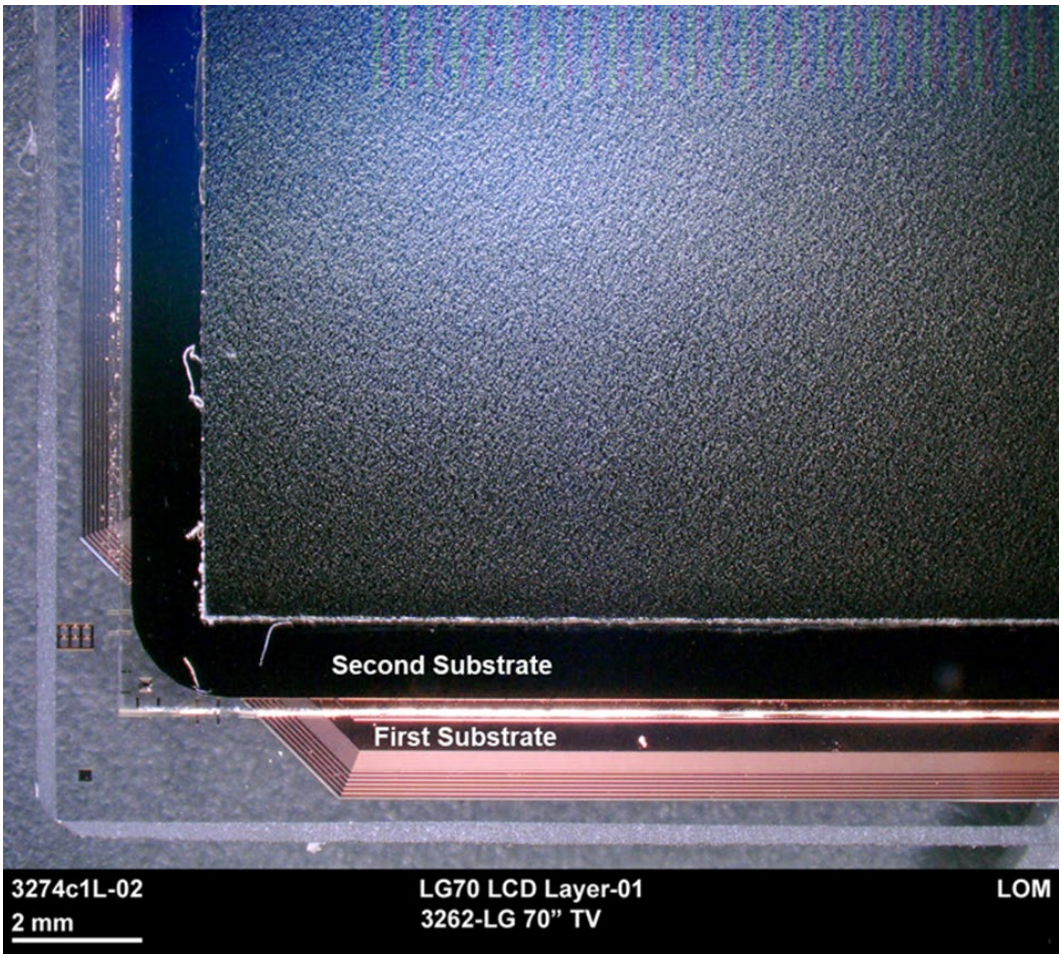
137. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, include a panel unit.

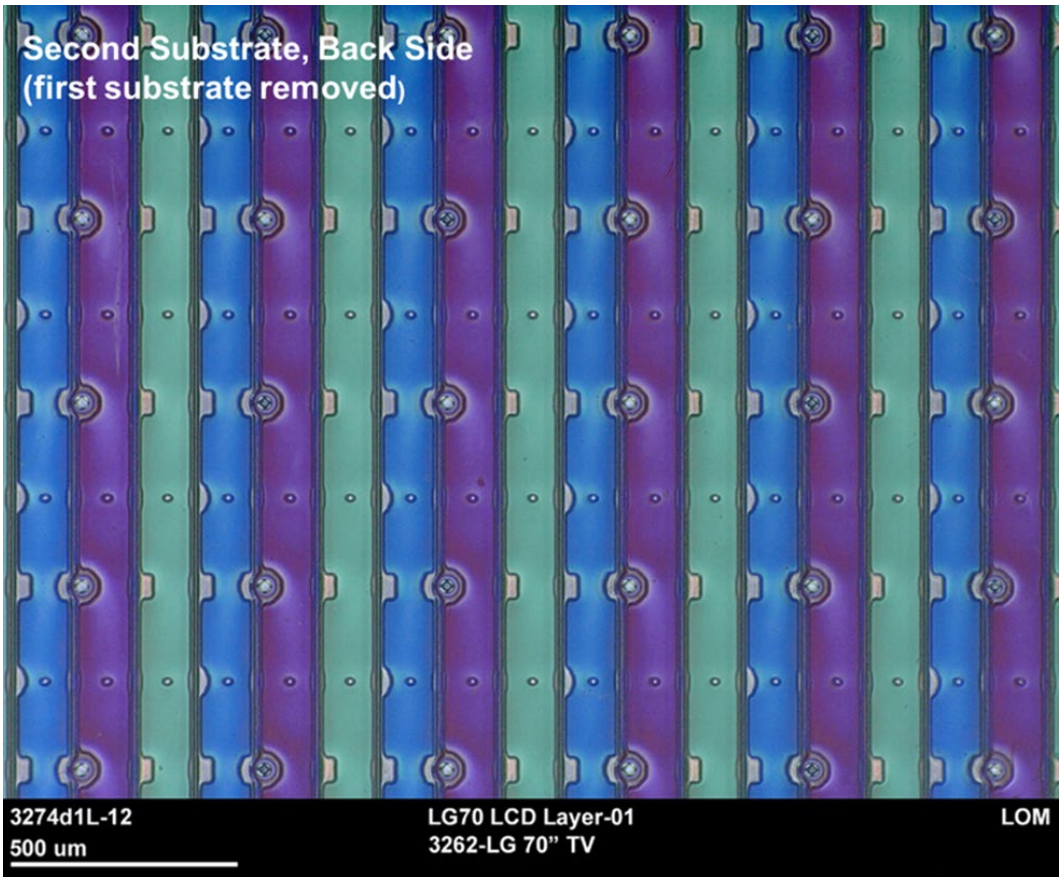
138. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including a first substrate.


First Substrate
3274c1L-02
2 mm
LG70 LCD Layer-01
3262-LG 70" TV
LOM

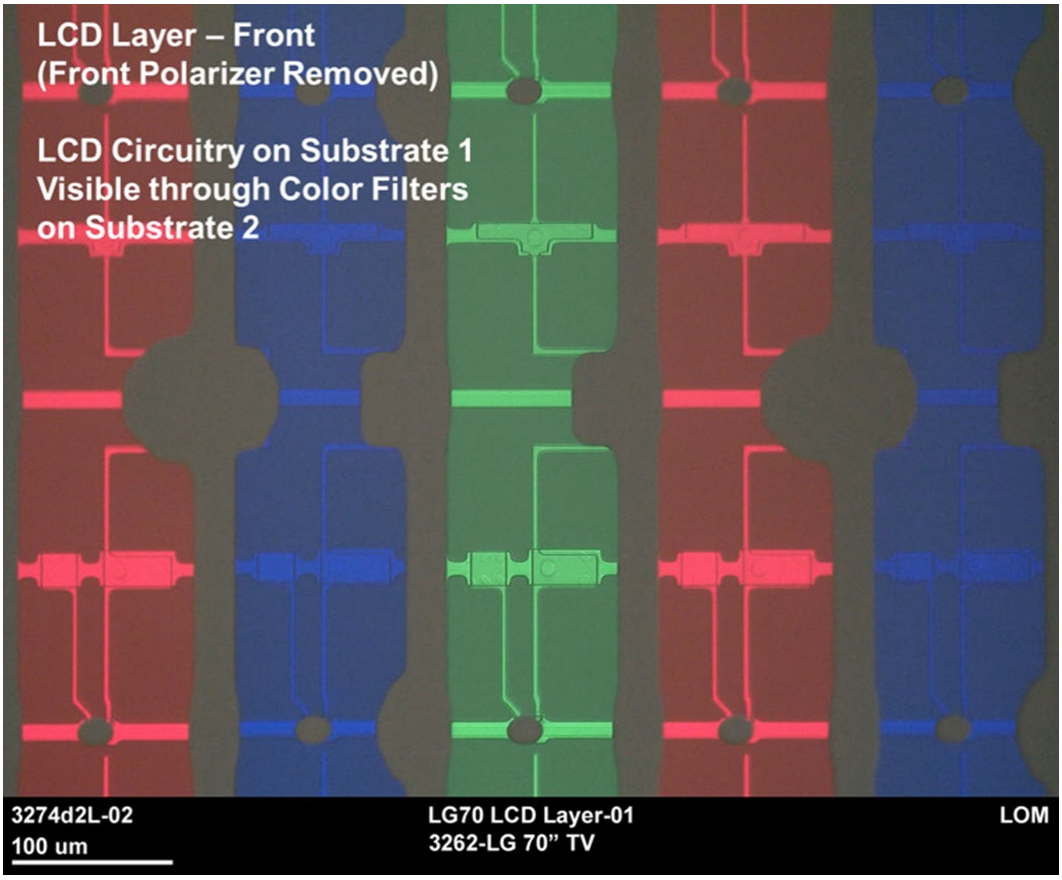

Pixel Electrode
First Substrate
3274d2S-074
25 um
LG70 LCD Layer-01
3262-LG 70" TV
SEM

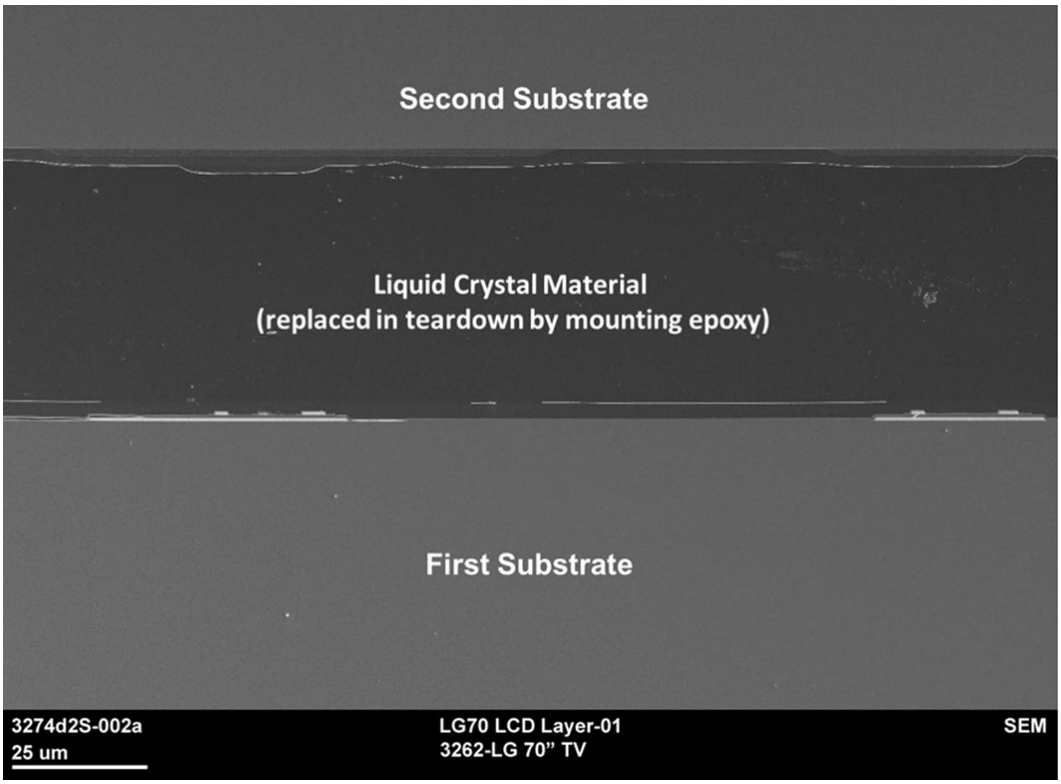
139. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including a second substrate.



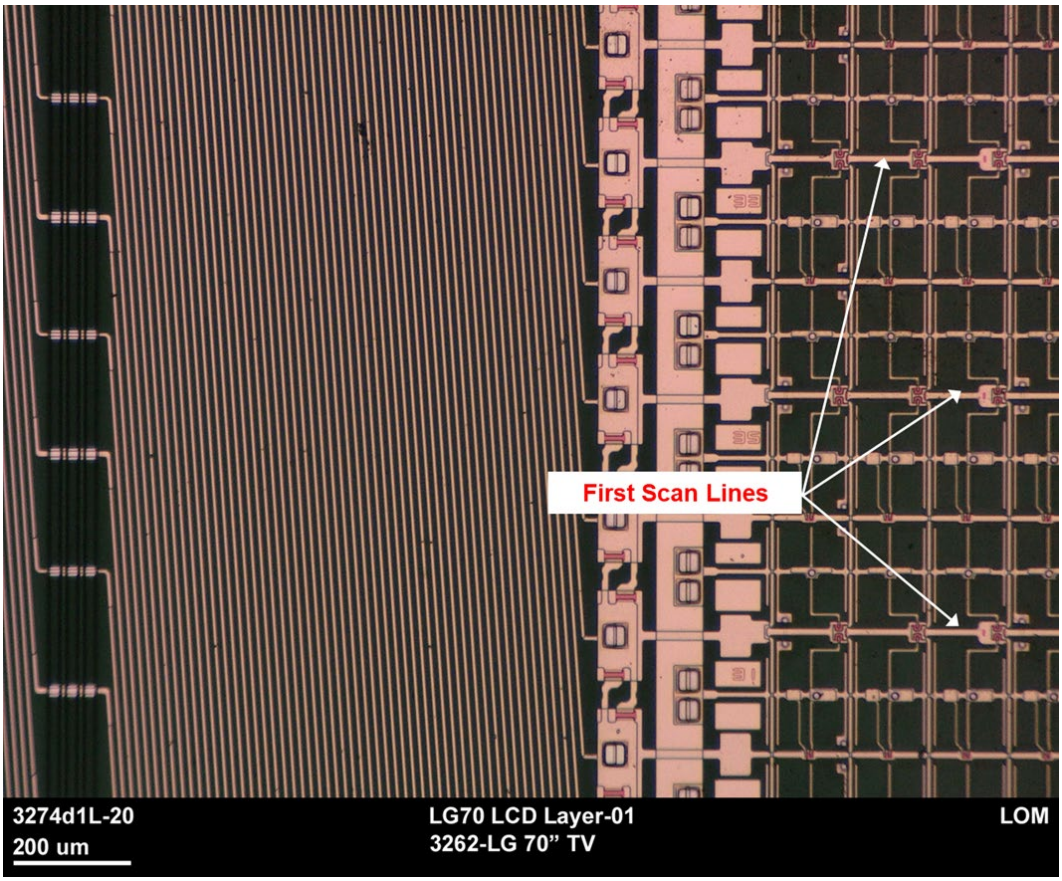


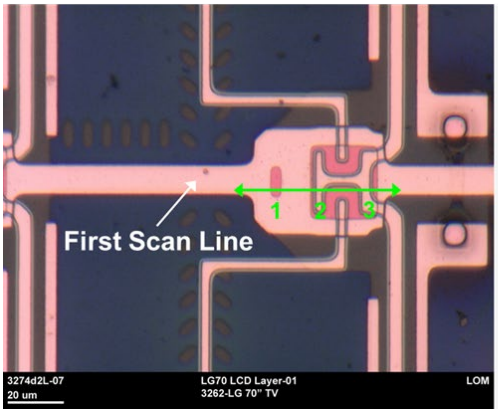
140. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including an electrooptic material interposed between the first and second substrates.

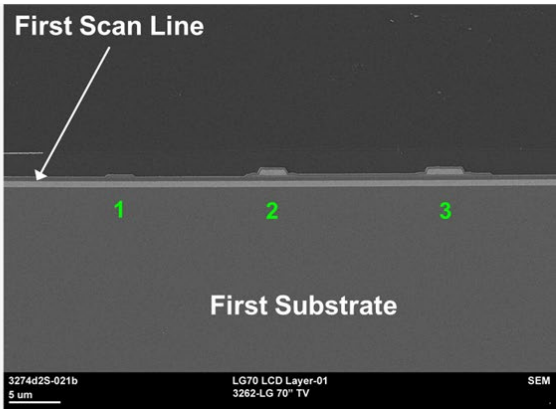

LCD Layer – Front
(Front Polarizer Removed)
LCD Circuitry on Substrate 1
Visible through Color Filters
on Substrate 2
3274d2L-02
100 um
LG70 LCD Layer-01
3262-LG 70" TV
LOM


Second Substrate
Liquid Crystal Material
(replaced in teardown by mounting epoxy)
First Substrate
3274d2S-002a
25 um
LG70 LCD Layer-01
3262-LG 70" TV
SEM

141. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including first scan lines provided above the first substrate.

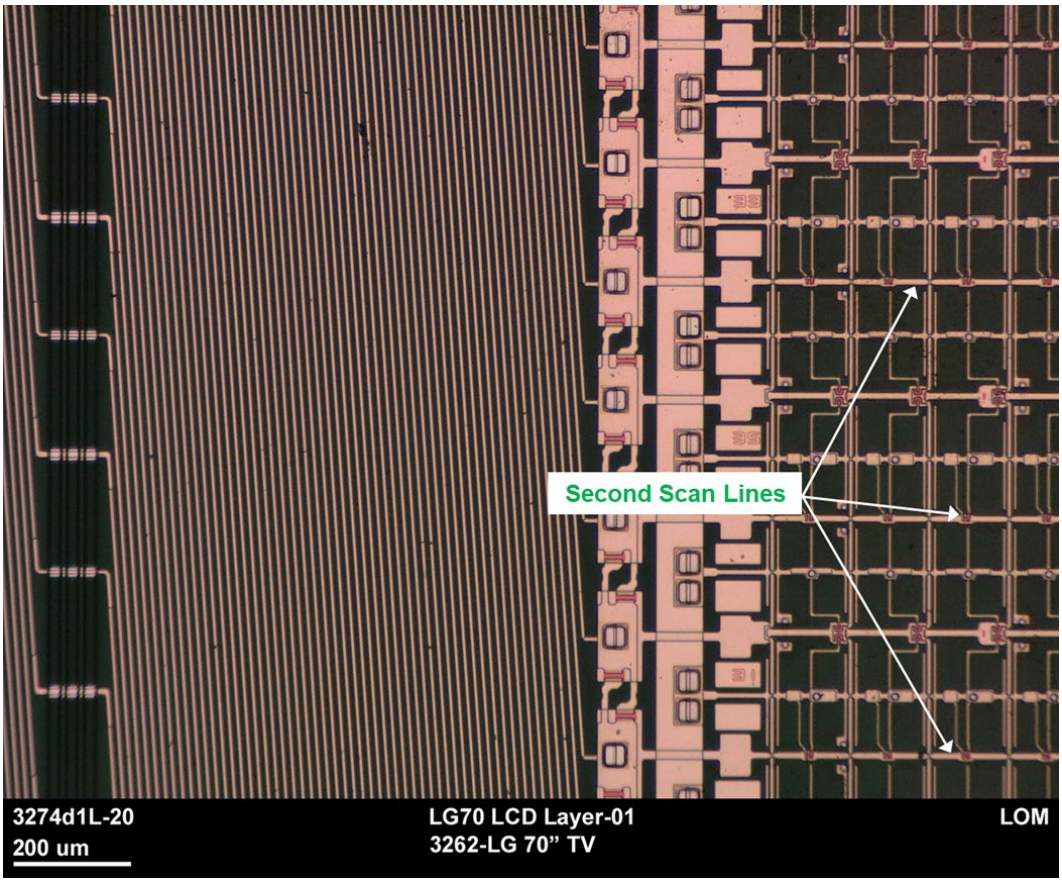


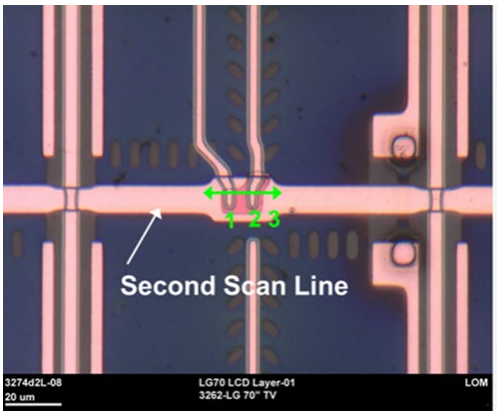


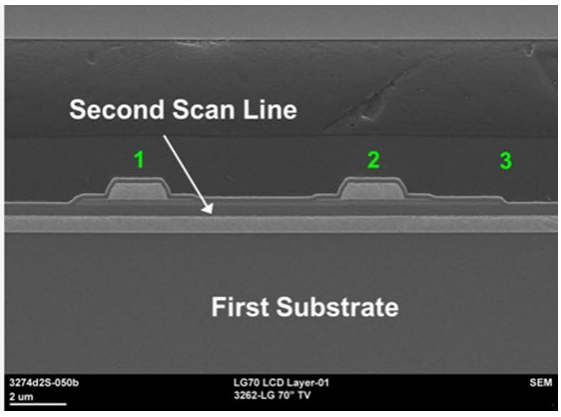


142. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137

including second scan lines provided above the first substrate and disposed in parallel to the first scan lines.

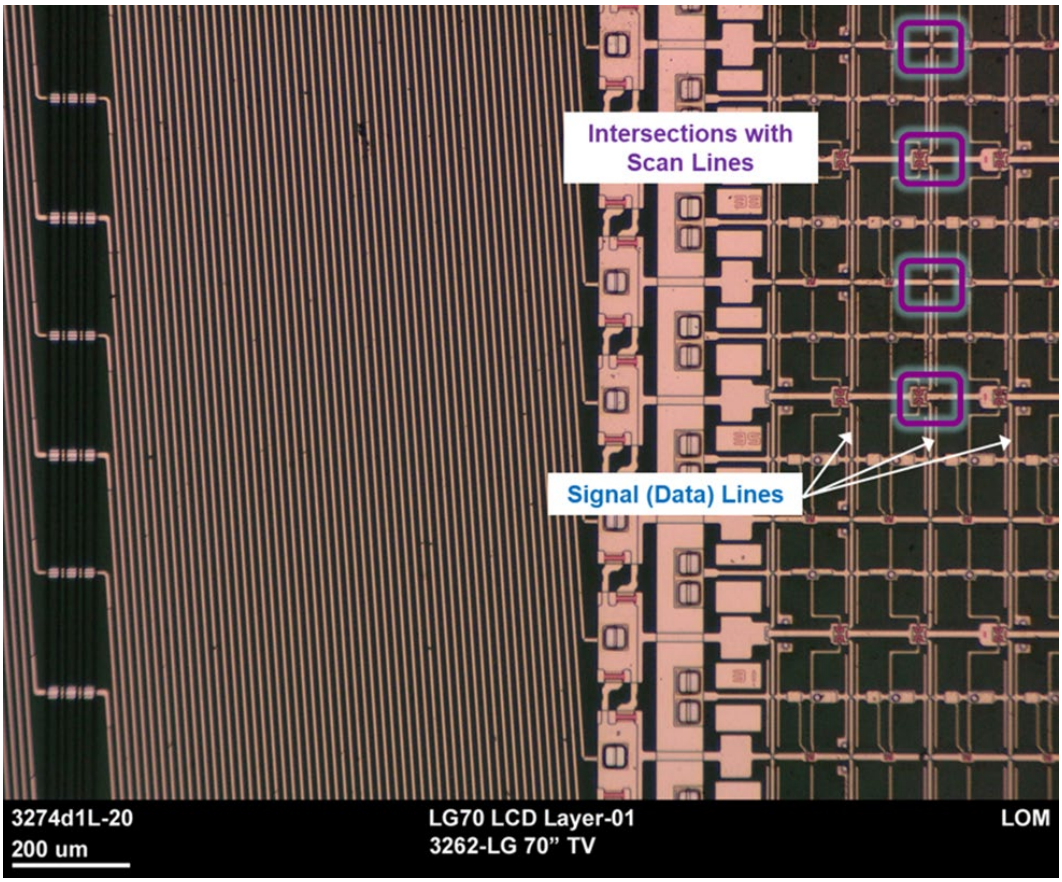




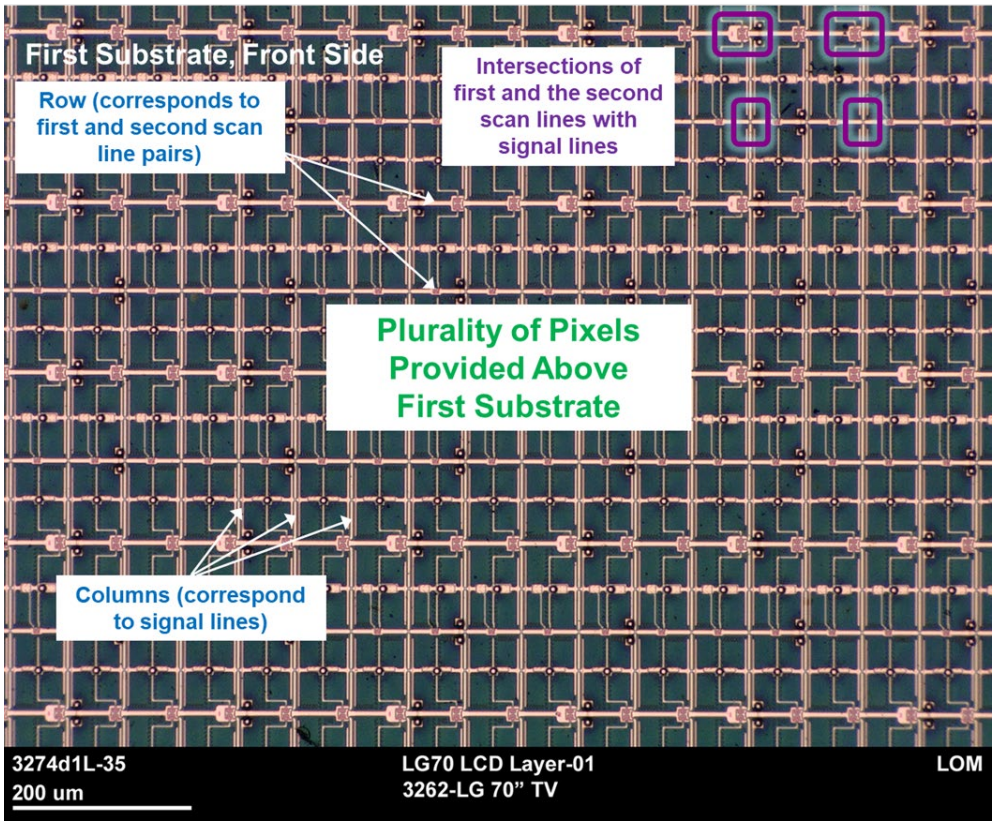


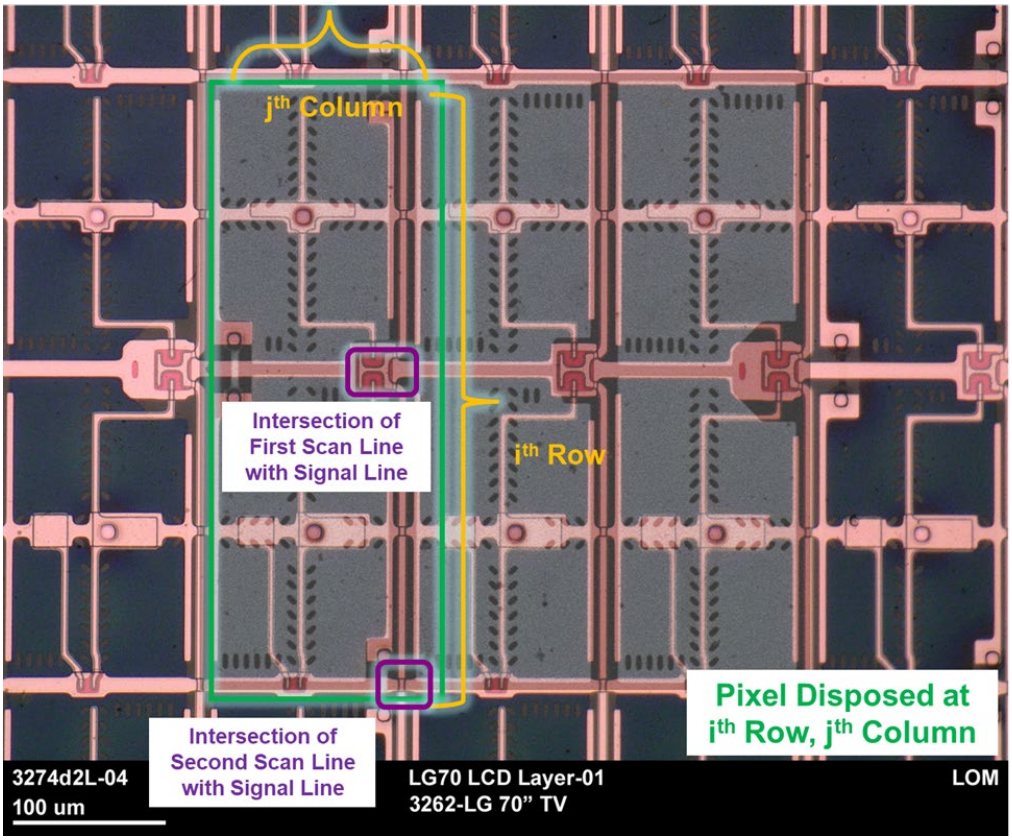
143. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including signal lines provided above the first substrate and intersecting the first scan

lines and the second scan lines.

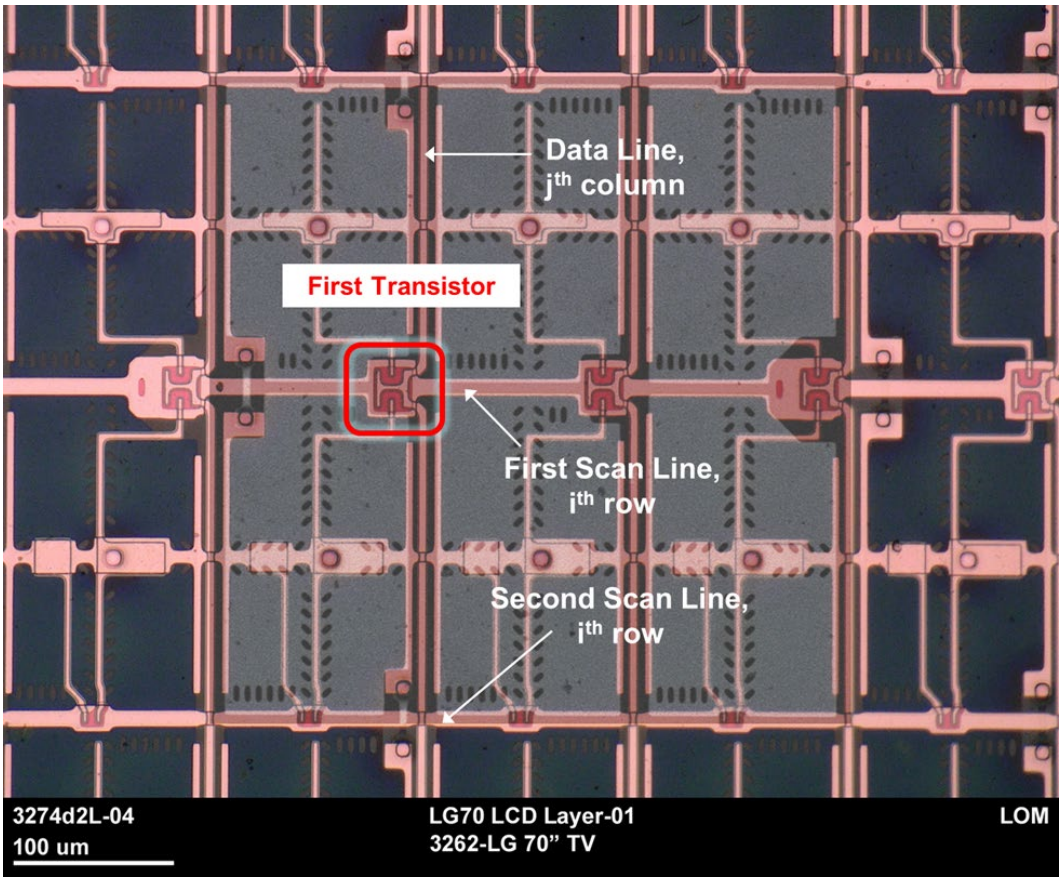


144. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the panel unit described in Paragraph 137 including pixels provided above the first substrate and disposed at intersections of the first scan lines and the second scan lines and the signal lines, each pixel located in an i-th row and a j-th column, the i and the j being both natural numbers.

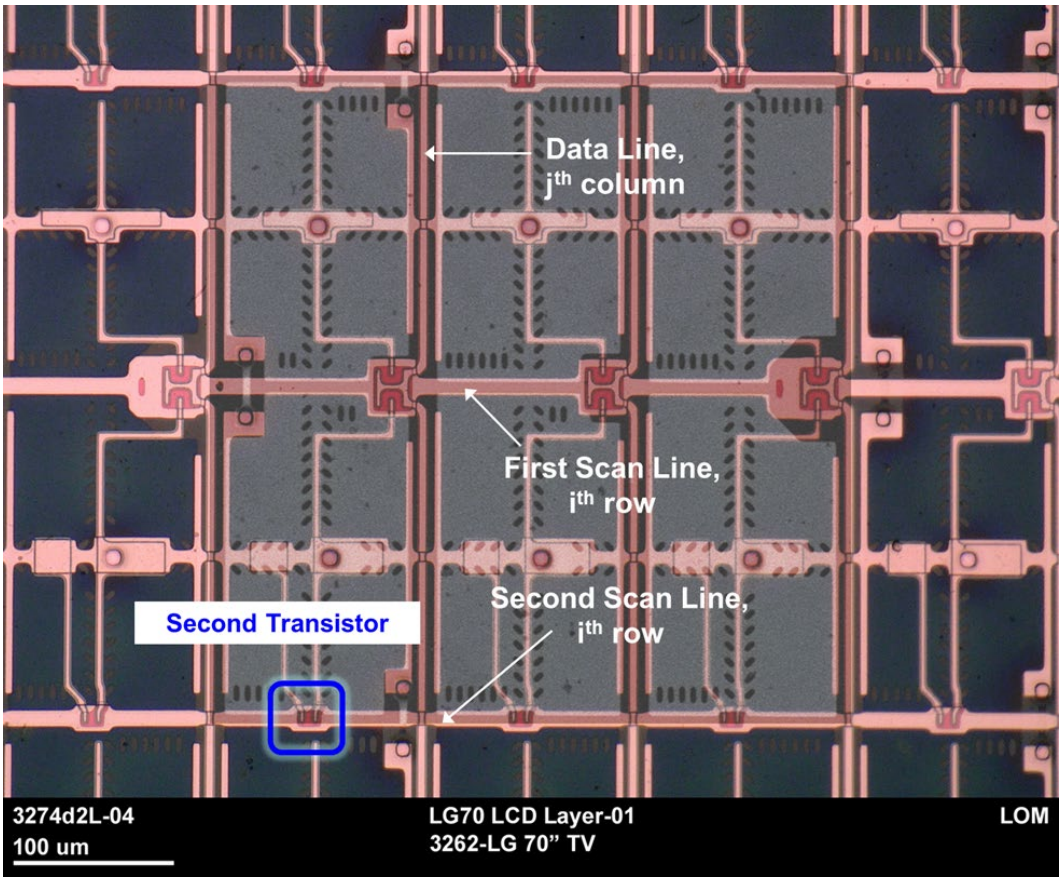

First Substrate, Front Side
Row (corresponds to first and second scan line pairs)
Intersections of first and the second scan lines with signal lines
Plurality of Pixels Provided Above First Substrate
Columns (correspond to signal lines)
3274d1L-35
200 um
LG70 LCD Layer-01
3262-LG 70" TV
LOM


jth Column
Intersection of First Scan Line with Signal Line
jth Row
Pixel Disposed at ith Row, jth Column
Intersection of Second Scan Line with Signal Line
3274d2L-04
100 um
LG70 LCD Layer-01
3262-LG 70" TV
LOM

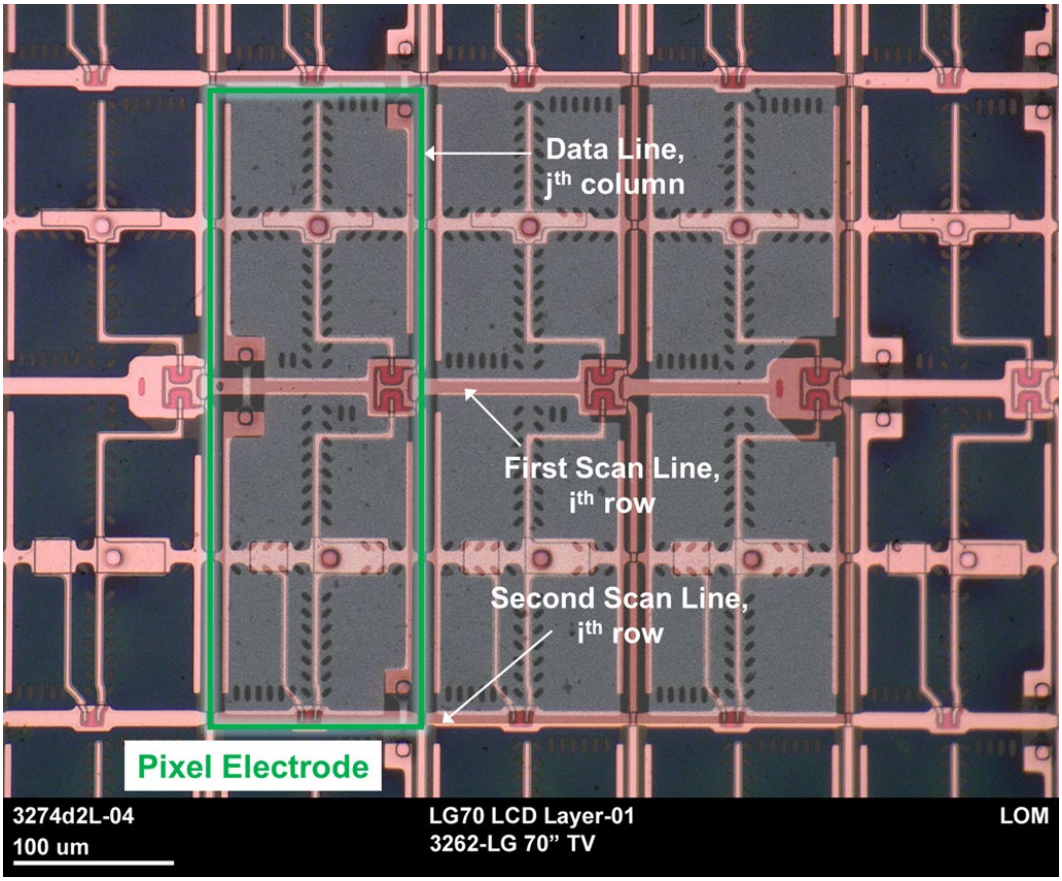
145. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise pixels as described at paragraph 144 and including a first transistor.

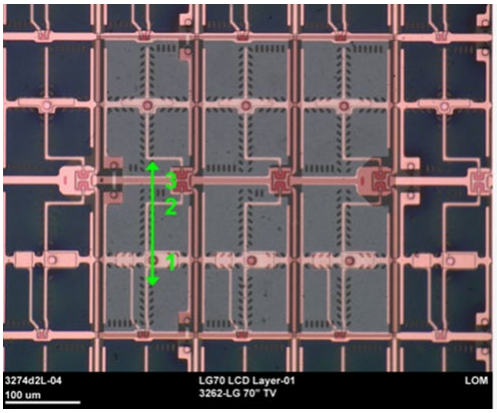


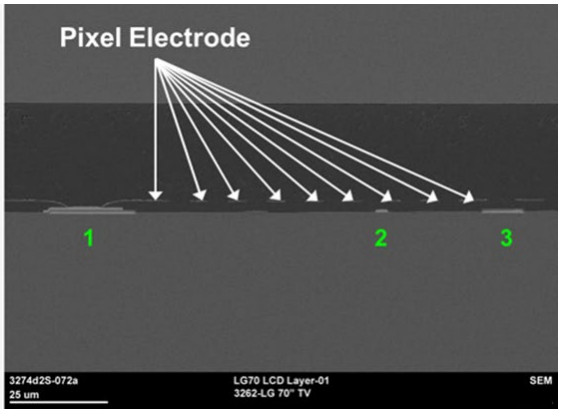
146. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise pixels as described at paragraph 144 and including a second transistor.



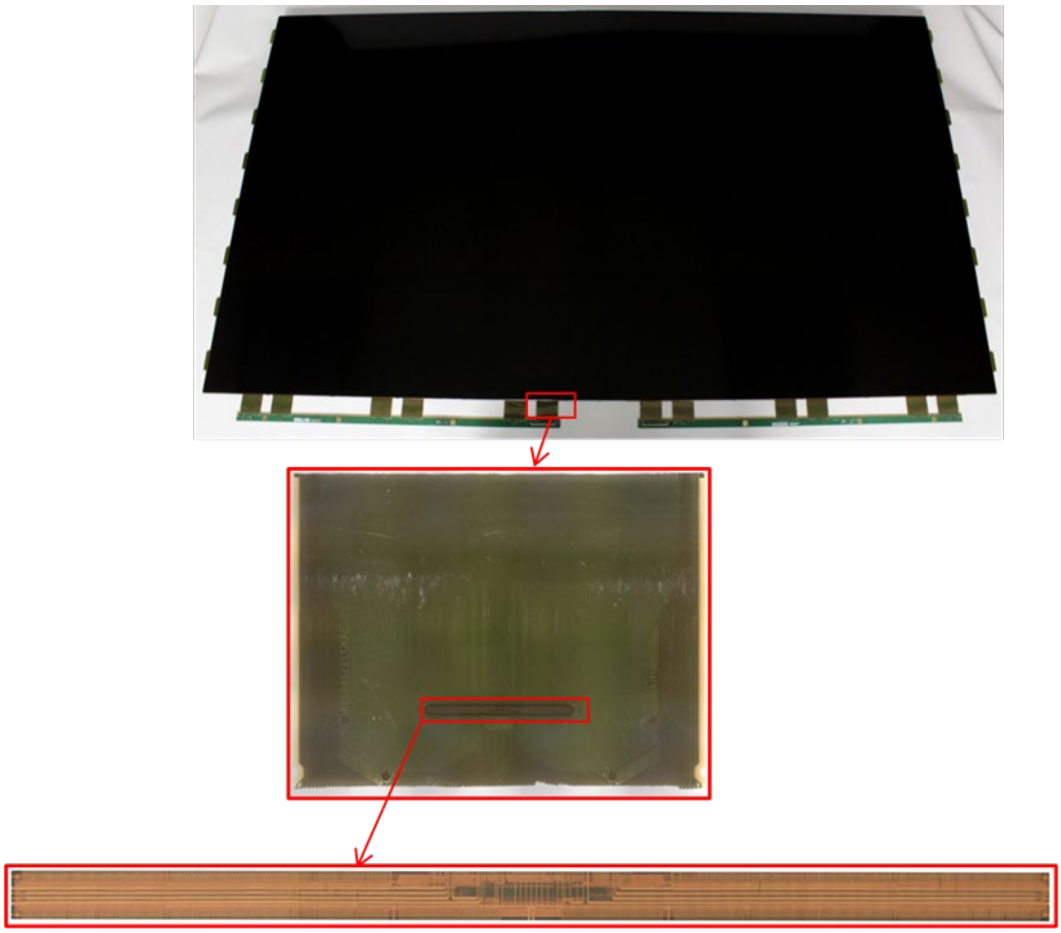
147. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise pixels as described at paragraph 144 and including a pixel electrode.



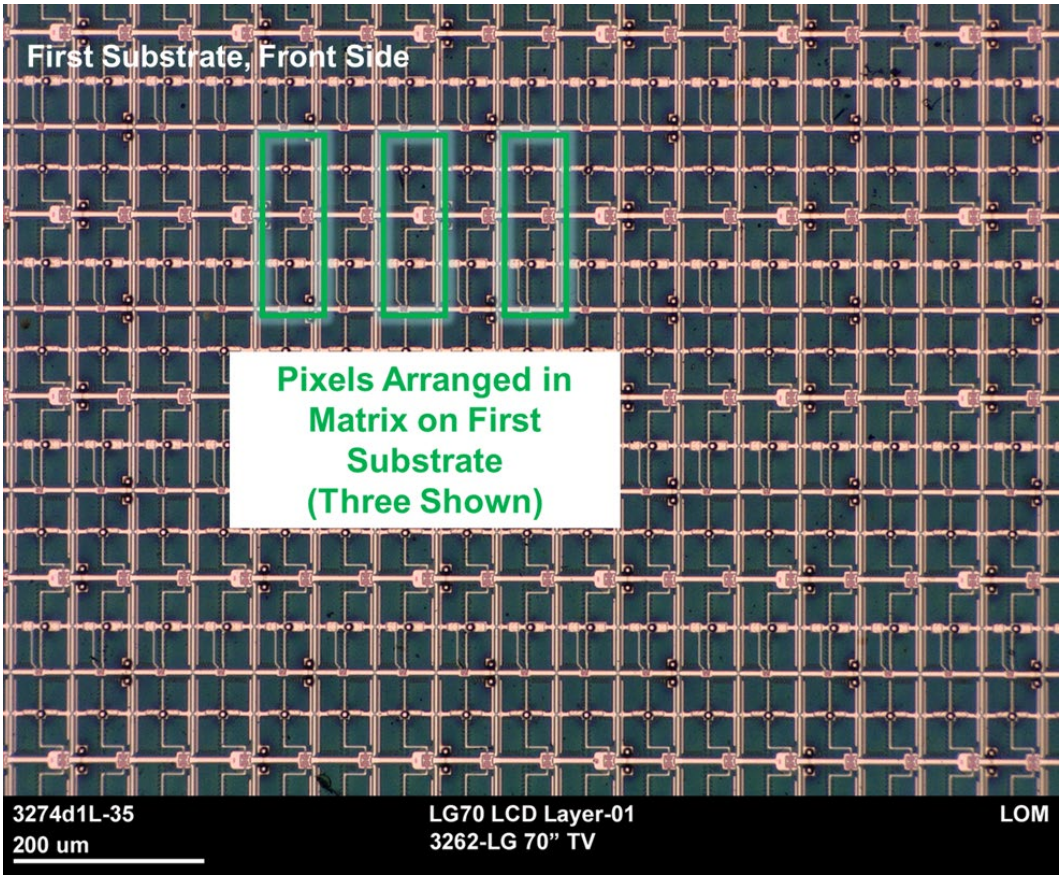




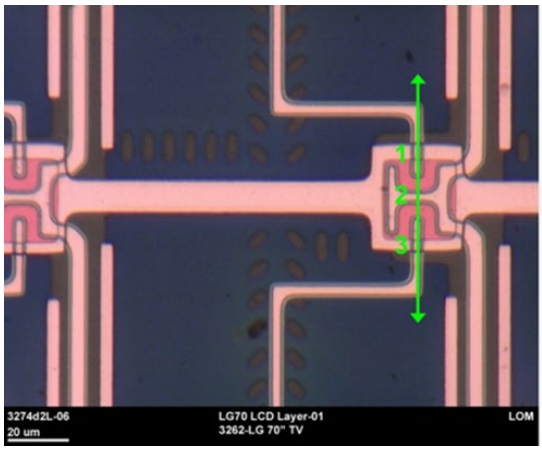
148. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise a data processing unit.

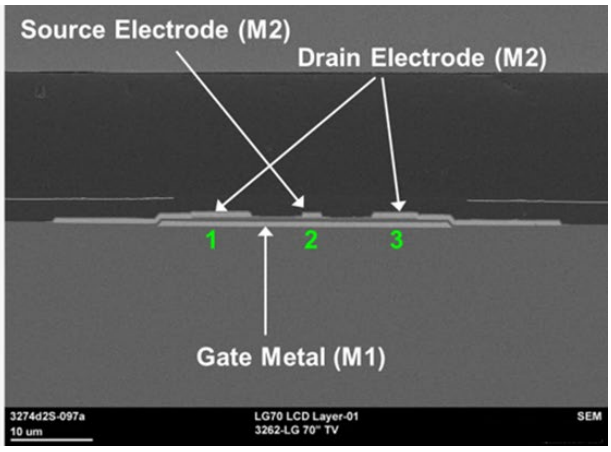


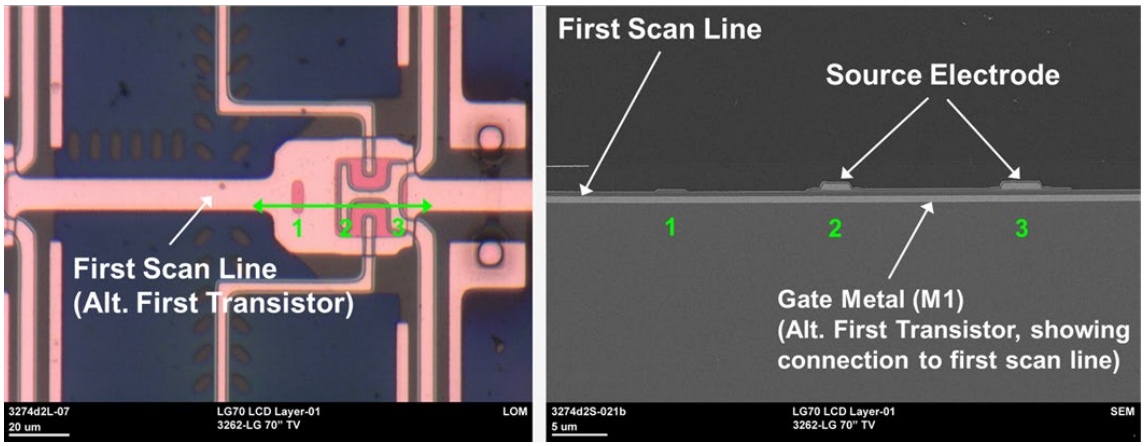
149. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein the plurality of pixels are formed in a matrix on the first substrate.



150. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein a gate of the first transistor is connected to the first scan line in the i-th row.

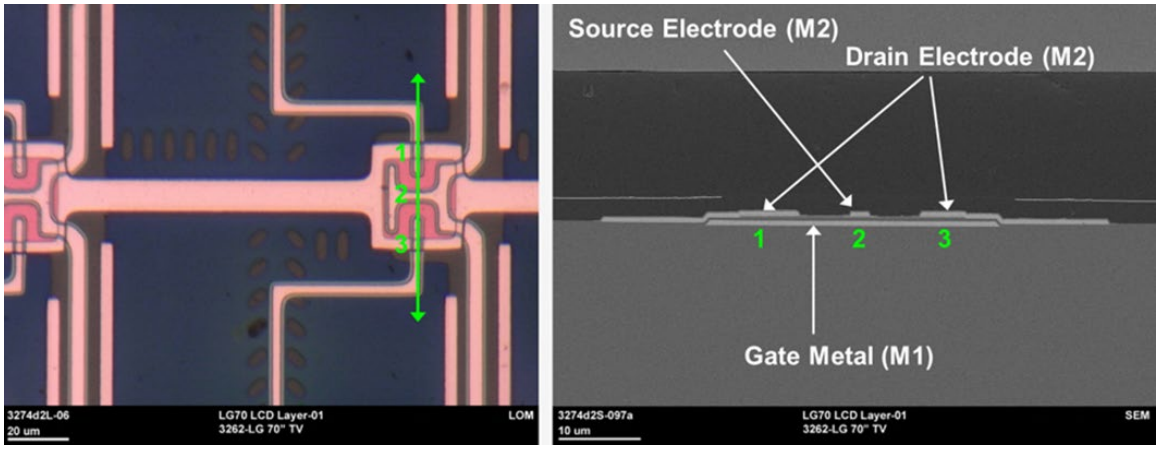


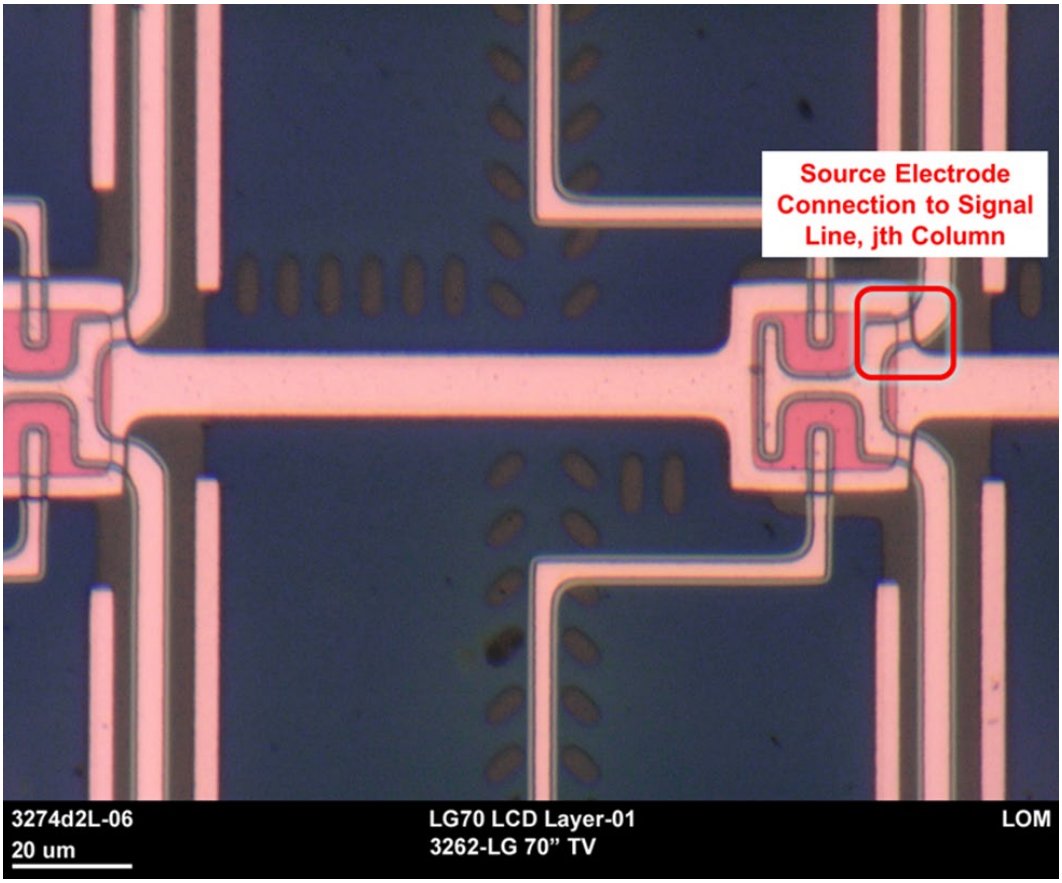




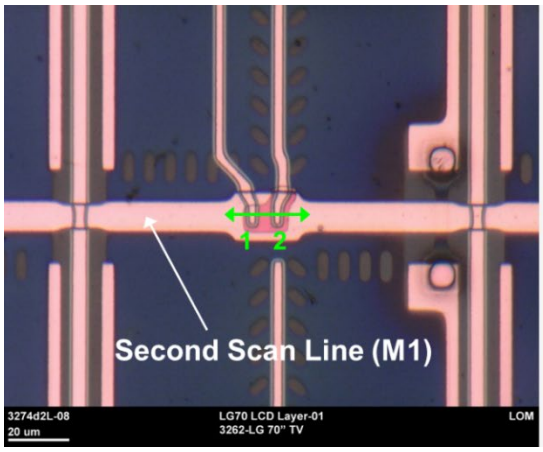
151. The transistor in the image immediately above is labeled "alternative" as it is one transistor to the left of the "first transistor." The structure of the two transistors ("alternative transistor" and "first transistor") is substantially identical, however, at least insofar as the transistor gate connects to the scan line in the i-th row.

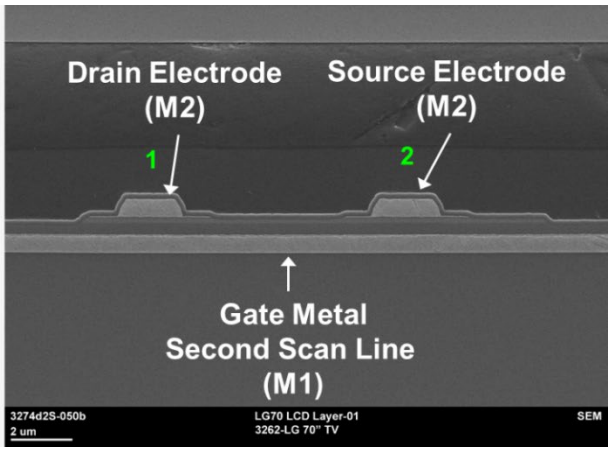
152. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein one of a source and a drain of the first transistor is connected to the signal line on the j-th column.



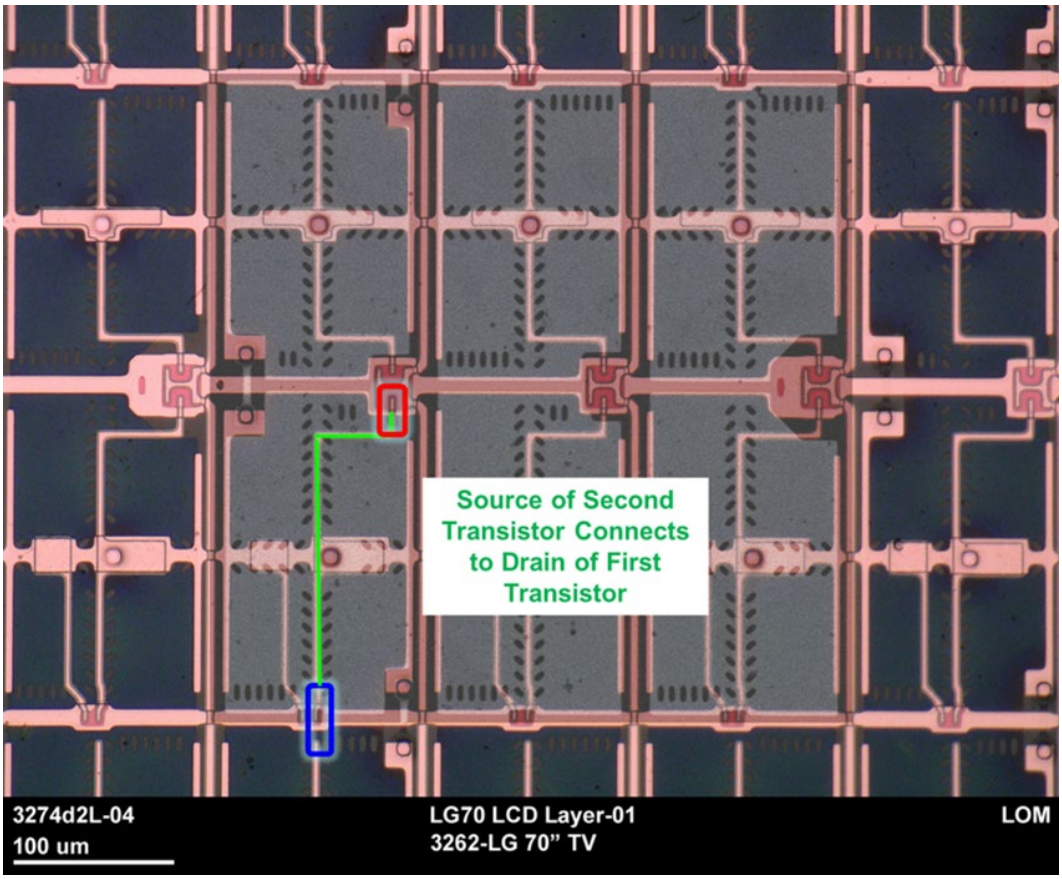


153. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein a gate of the second transistor is connected to the second scan line in the i-th row.

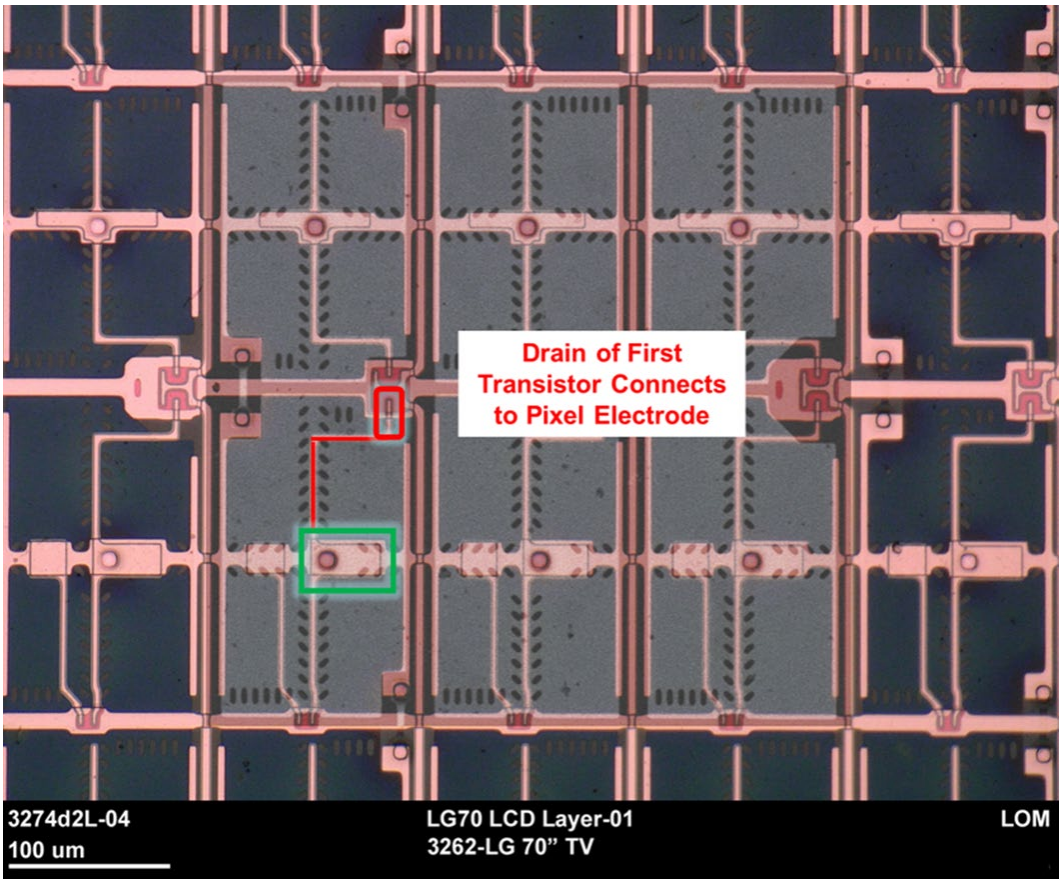


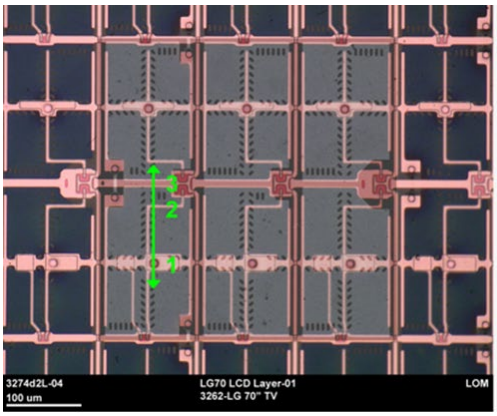


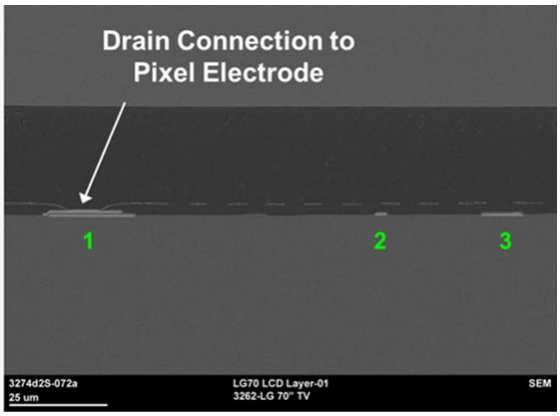
154. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein one of a source and a drain of the second transistor is connected to the other of the source and drain of the first transistor.



155. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UK6570AUB TV, comprise the data processing unit described in paragraph 148 wherein the other of the source and drain of the first transistor is connected to the pixel electrode.







156. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the '171 patent and the infringement alleged herein as of on or around September 15, 2022, when Longitude provided notice to Sharp.

157. Sharp has indirectly infringed and continues to indirectly infringe the '171 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of

the ’171 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

158. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’171 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’171 patent.

159. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

160. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’171 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

161. Sharp has induced others’ direct infringement despite actual notice that the Accused Instrumentalities infringe the ’171 patent. As of at least September 15, 2022, Sharp knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to

induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

162. The above-described acts of infringement have caused injury and damage to Longitude.

163. Sharp's infringement has been willful.

164. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. 8,319,512

165. Pursuant to 35 U.S.C. § 282, the '512 patent is presumed valid.

166. Sharp has directly infringed and continues to directly infringe one or more claims of the '512 patent, in violation of 35 U.S.C. § 271(a).

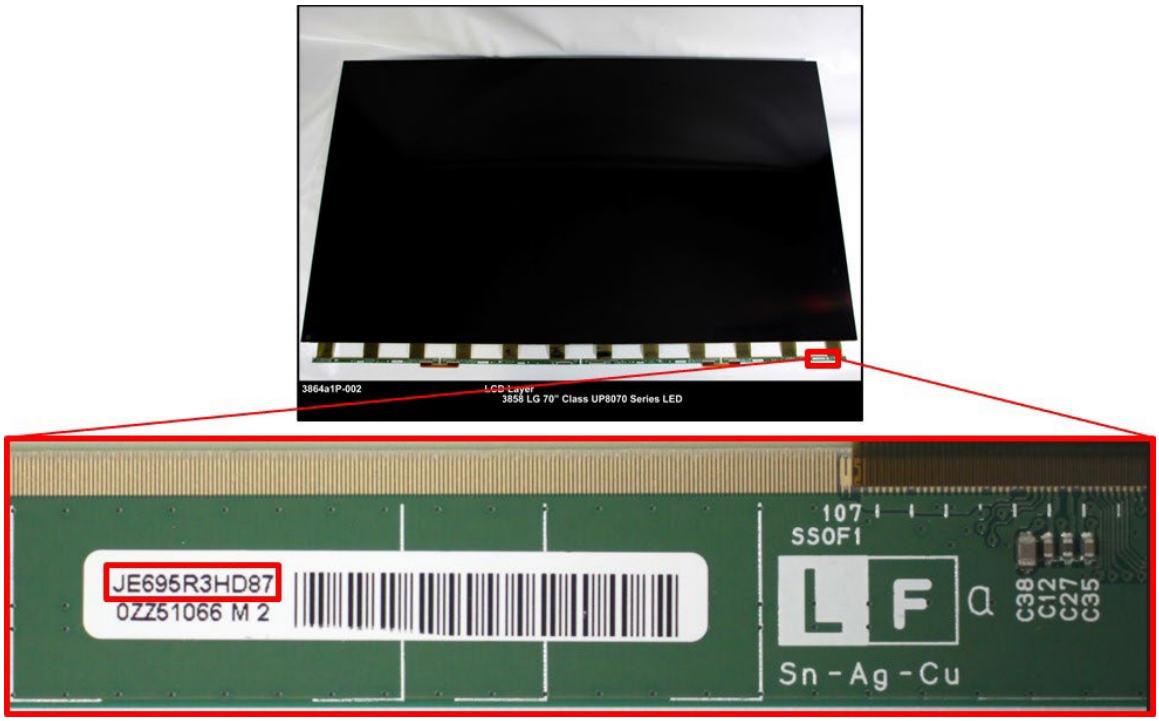
167. The Accused Instrumentalities directly infringe at least claims 10-12 of the '512 patent.

168. Paragraphs 170-178 describe the manner in which the Accused Instrumentalities infringe claim 10 of the '512 patent, by way of the Sharp LCD panel in the exemplary LG 70UP80 70-inch 4K TV, model 70UP8070PUA. Longitude's allegations of infringement are not limited to claim 10 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

169. On information and belief, the Accused Instrumentalities, which include at

least the Sharp LCD panel in the Sharp AQUOS 8K monitor 8M-B70AU, are in relevant part substantially similar to the exemplary Sharp LCD panel in the LG 70UP8070PUA TV, in particular with regard to the Accused Instrumentalities where the LCD panel is attached to a flexible substrate that includes an inspection electrode electrically connected to an integrated circuit, wherein the inspection electrode is capable of outputting a signal processed by the integrated circuit. Paragraphs 170-178 are thus illustrative of the manner in which each Accused Instrumentalities infringes.

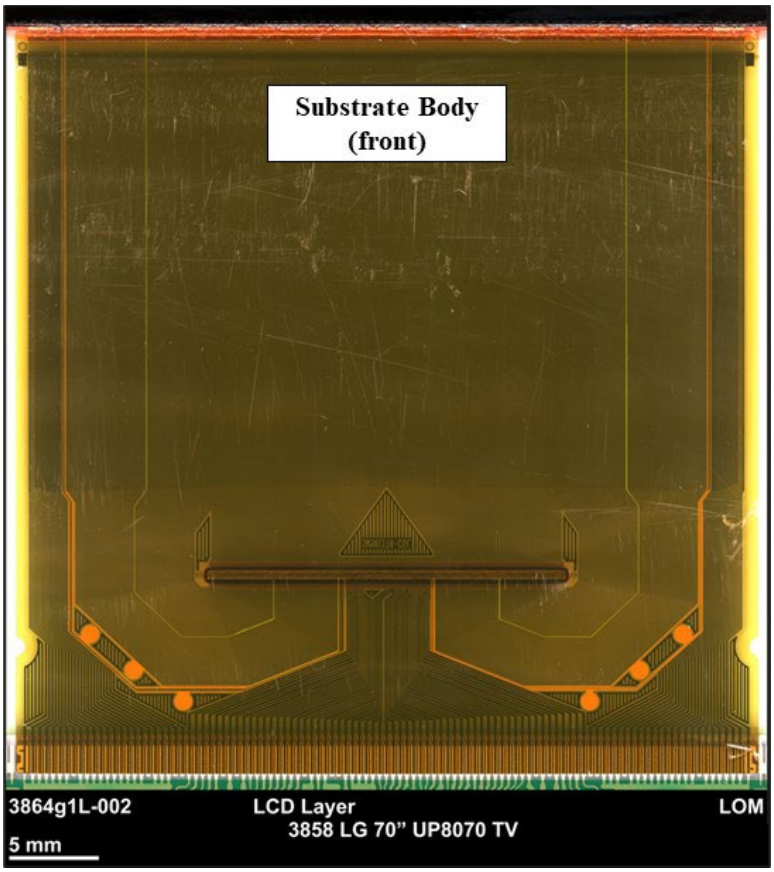
170. The LCD panel in the LG 70UP8070PUA TV is a Sharp LCD panel, as indicated by the "JE695R3HD87" part number on the LCD panel PCB shown below. LCD panel part numbers beginning with "JE695R3H" refer to a group of Sharp 70-inch LCD panels. *See* https://www.panelook.com/modelsearch.php?keyword=JE695R3H.



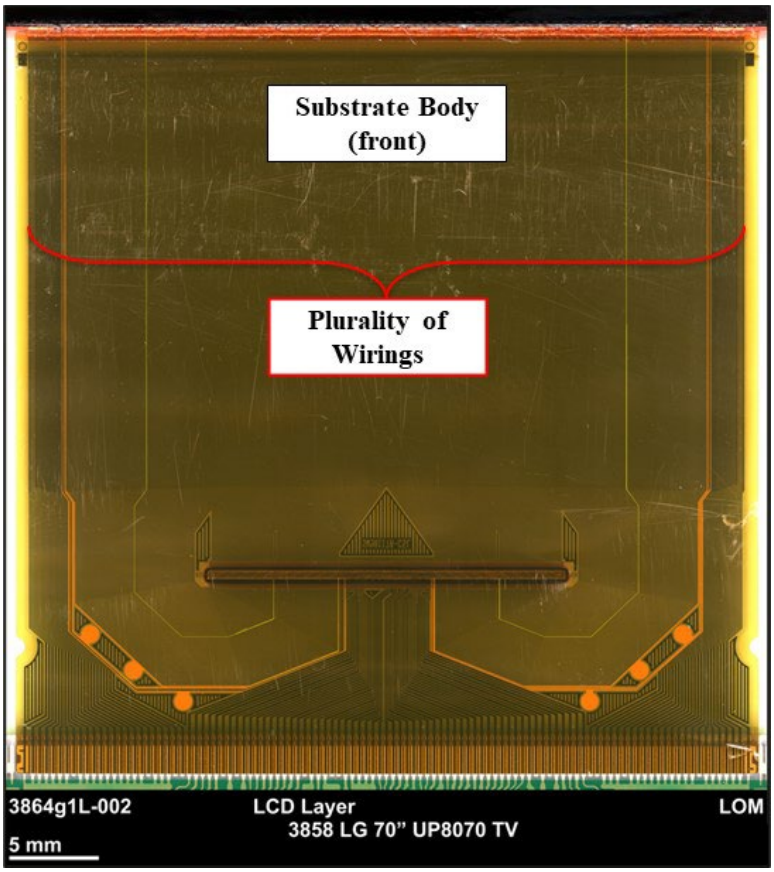
171. Sharp LCD panels and modules, including, for example, the Sharp LCD

panel in the LG 70UP8070PUA TV, include a flexible substrate.

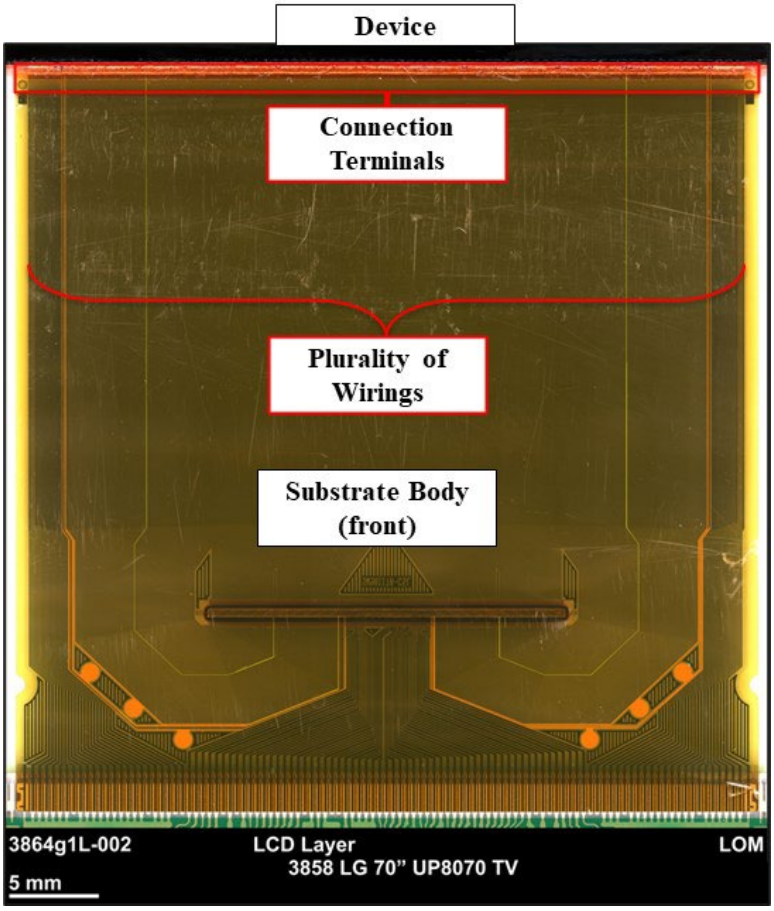
172. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, comprise a substrate body.



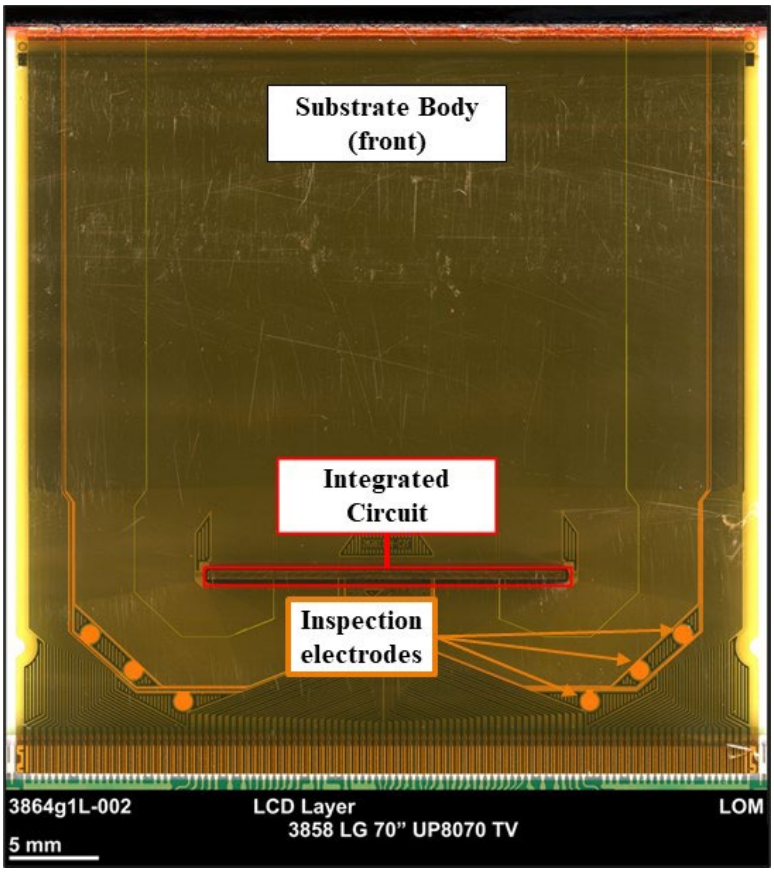
173. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, comprise a plurality of wirings that are arranged on the substrate body.

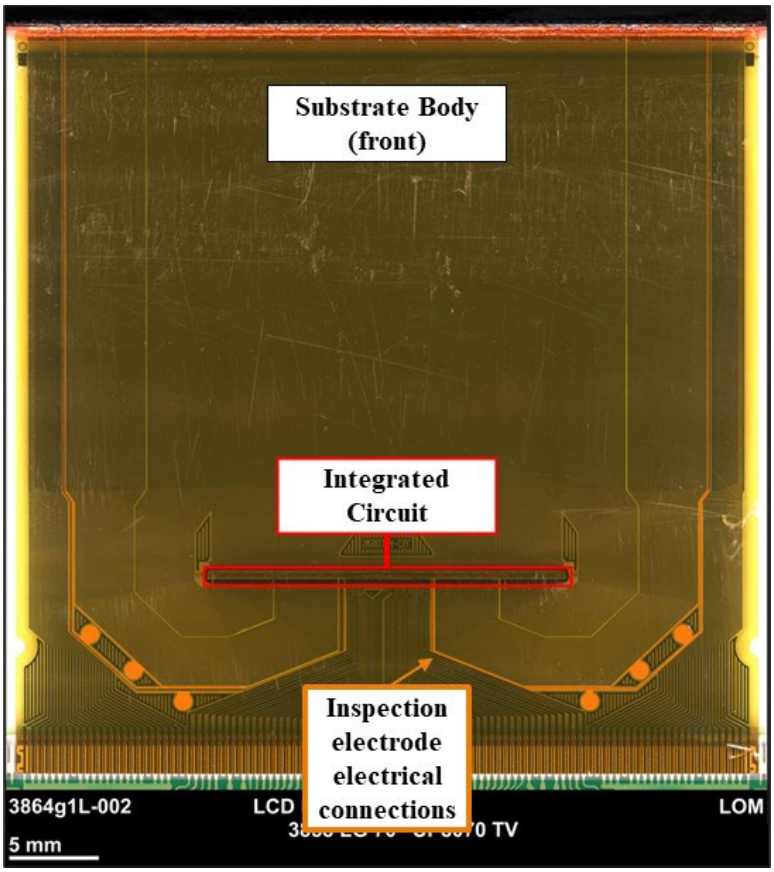


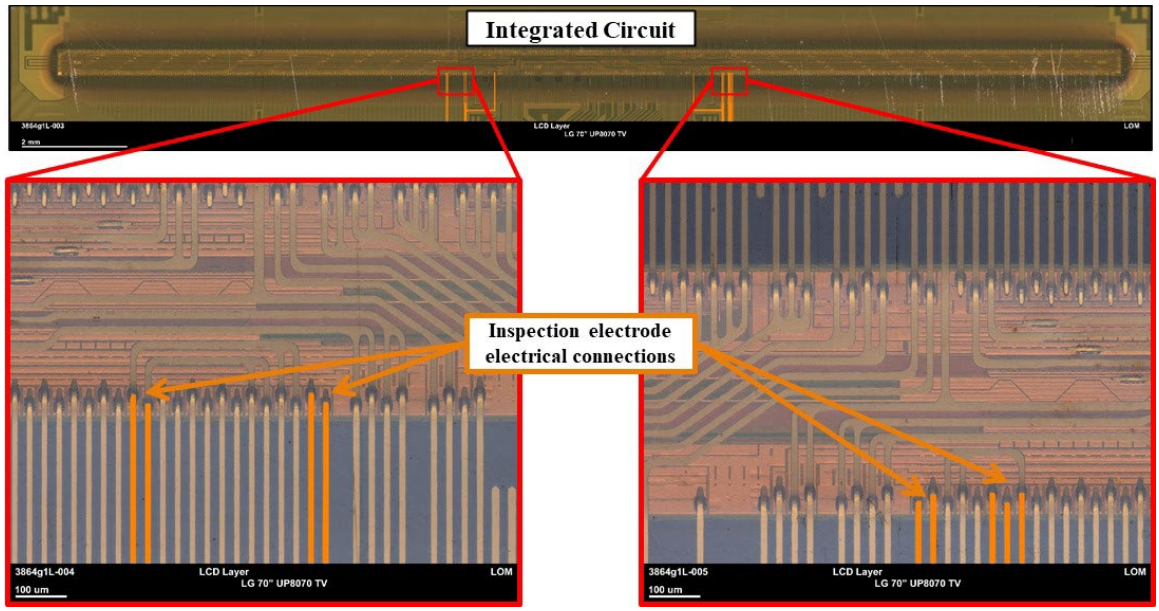
174. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, comprise a plurality of connection terminals that electrically connect a device and at least one of the plurality of wirings.



175. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, comprise an inspection electrode that is arranged on the substrate body, the inspection electrode electrically connecting to an integrated circuit, the inspection electrode being capable of outputting a signal processed by the integrated circuit. The inspection electrode is arranged on the substrate body and is electrically connected to an integrated circuit.

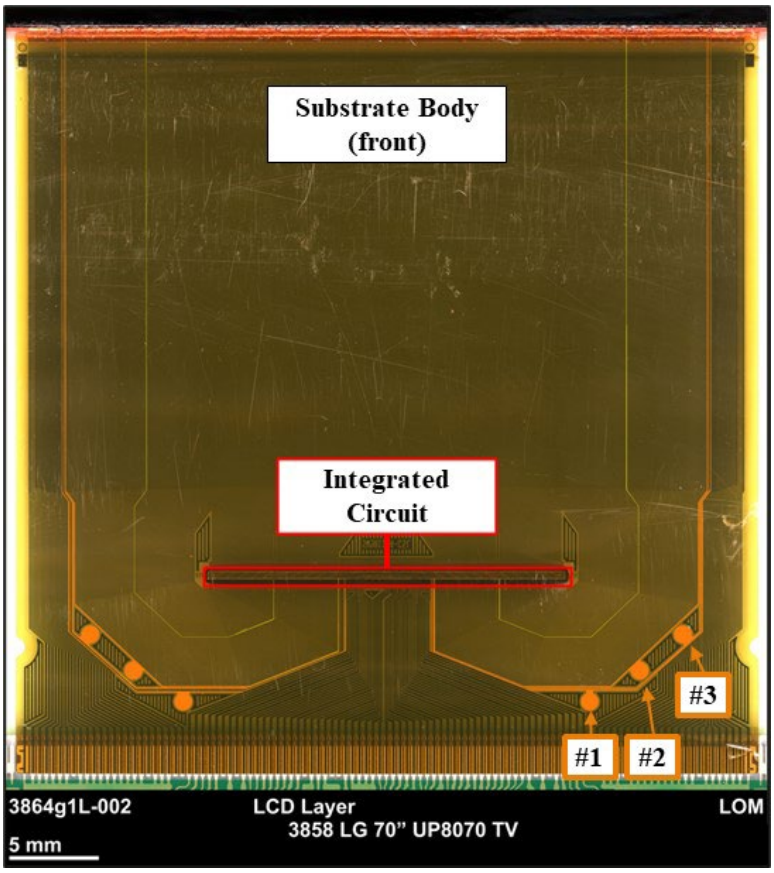

Substrate Body
(front)
Integrated
Circuit
Inspection
electrodes
3864g1L-002
LCD Layer
3858 LG 70" UP8070 TV
LOM
5 mm



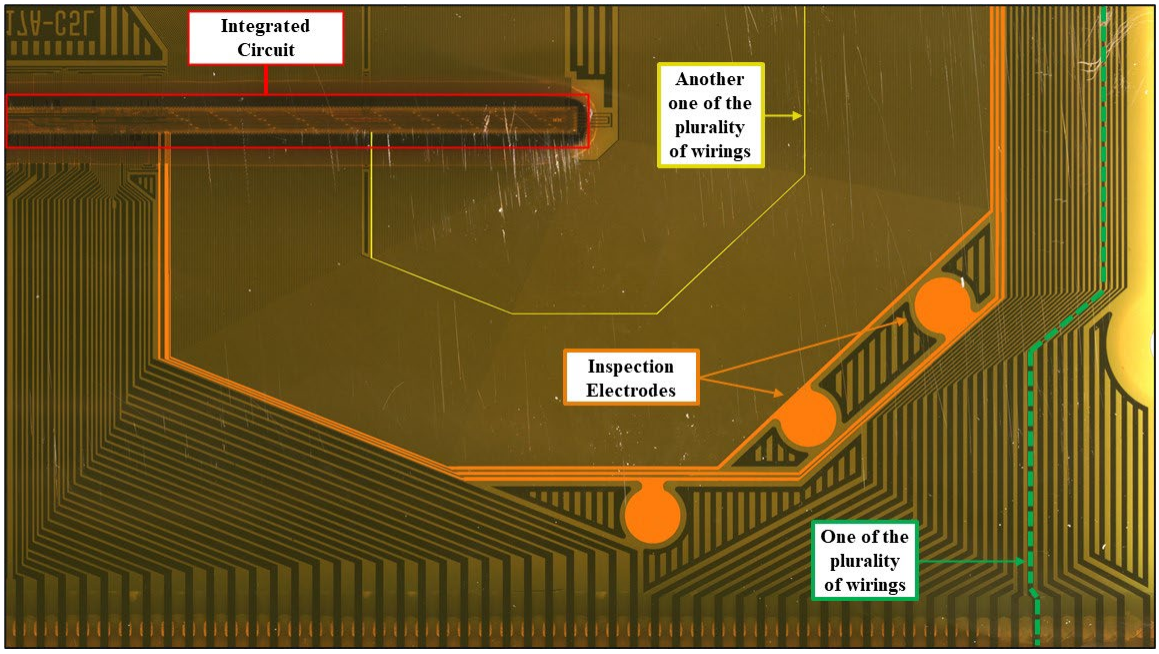


176. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, comprise an inspection electrode that is capable of

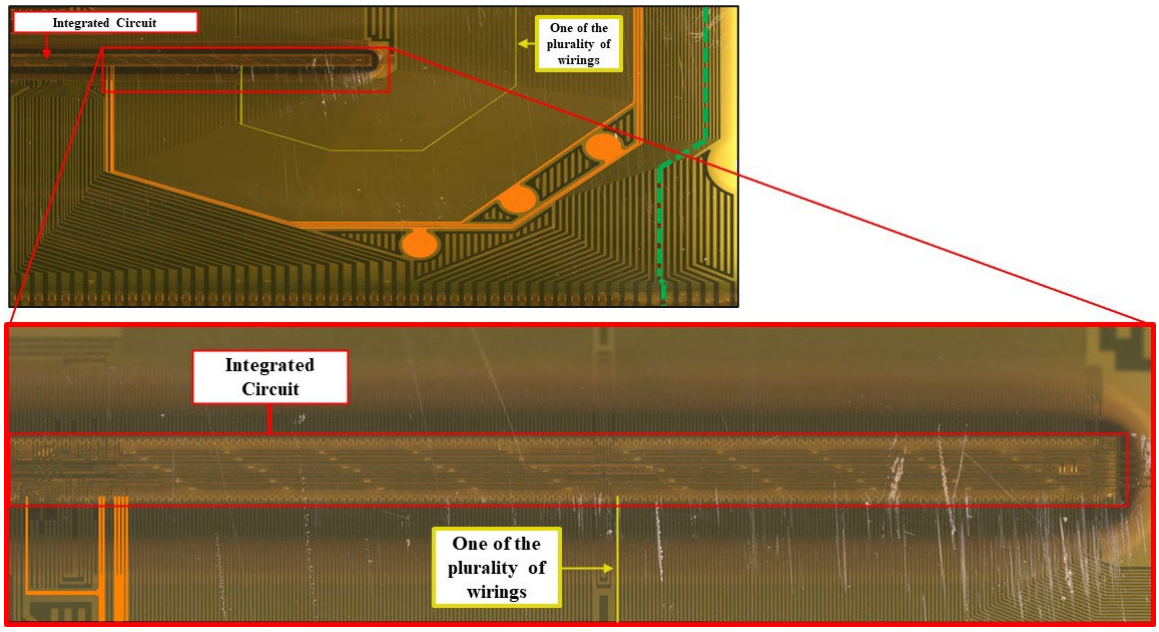
outputting a signal processed by the integrated circuit. The inspection electrodes labeled #2 and #3 below are connected to the source driver of the integrated circuit and are therefore capable of outputting a signal processed by the integrated circuit.



177. The inspection electrodes that are arranged on the flexible substrate body of Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the LG 70UP8070PUA TV, are disposed between one of the plurality of wirings and another one of the plurality of wirings, wherein the integrated circuit is electrically connected to at least one of the plurality of wirings. The inspection electrodes are arranged between one of the plurality of wirings and another one of the plurality of wirings:



178. The integrated circuit is electrically connected to at least one of the plurality of wirings:



179. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the ’512 patent and the infringement alleged herein as of on or around September 15, 2022, when Longitude provided notice to Sharp.

180. Sharp has indirectly infringed and continues to indirectly infringe the ’512 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of the ’512 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

181. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’512 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’512 patent.

182. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

183. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’512 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

184. Sharp has induced others’ direct infringement despite actual notice that the Accused Instrumentalities infringe the ’512 patent. As of at least September 15, 2022, Sharp knew that the induced conduct would constitute infringement—and intended that

infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

185. The above-described acts of infringement have caused injury and damage to Longitude.

186. Sharp's infringement has been willful.

187. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT VI: INFRINGEMENT OF U.S. PATENT NO. 9,557,606

188. Pursuant to 35 U.S.C. § 282, the '606 patent is presumed valid.

189. Sharp has directly infringed and continues to directly infringe one or more claims of the '606 patent, in violation of 35 U.S.C. § 271(a).

190. The Accused Instrumentalities directly infringe at least claims 13 and 20 of the '606 patent.

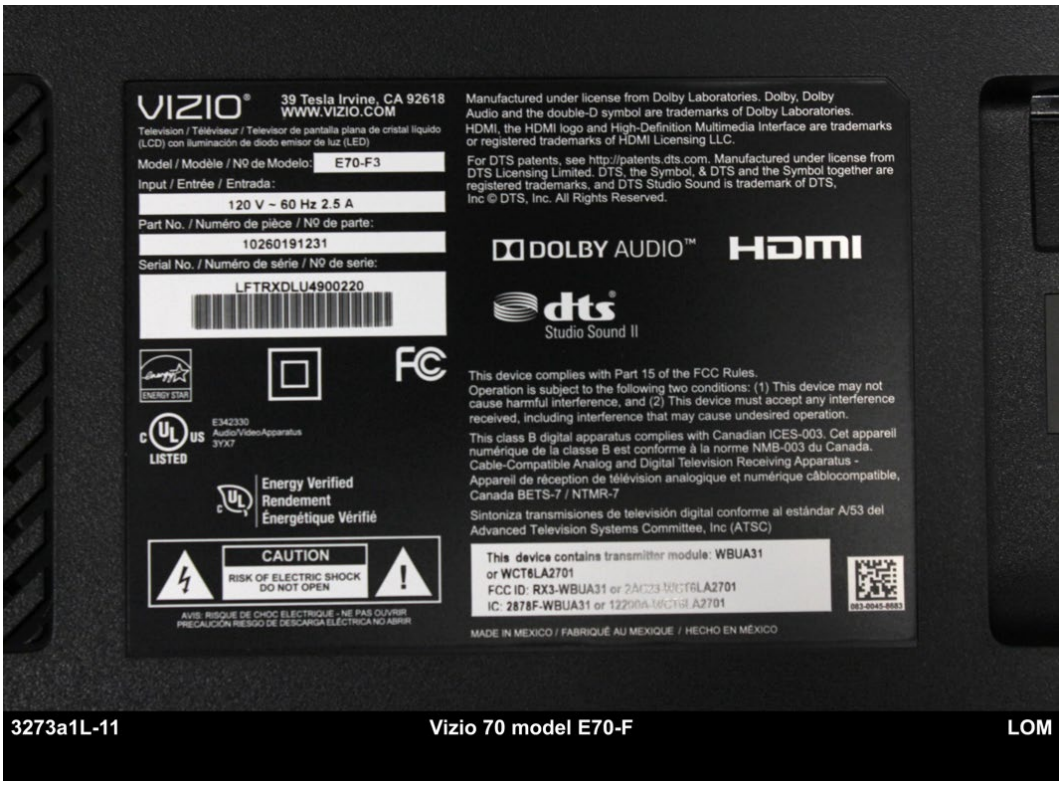
191. Paragraphs 193-207 describe the manner in which the Accused Instrumentalities infringe claim 13 of the '606 patent, by way of the exemplary Sharp LCD panel in the Vizio 70-inch E70-F3 TV. Longitude's allegations of infringement are not limited to claim 13 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

192. On information and belief, the Accused Instrumentalities, which include at least the Sharp LCD panel in the LG 70UK6570AUB TV and the Sharp LCD panel in the Sharp AQUOS 8K monitor 8M-B70AU, are in relevant part substantially similar to the exemplary Sharp LCD panel in the Vizio E70-F3 TV, in particular with regard to the manner in which the Accused Instrumentalities include a first substrate including a plurality of pixel electrodes, thin film transistors, and wiring lines; a second substrate including a common electrode; a display region; a seal region positioned around the display region and forming a closed-ring shape in which the display region is disposed; a seal member being disposed in the seal region and bonding the first substrate and the second substrate so that the common electrode faces the plurality of pixel electrodes, the seal member forming a closed-ring shape in which the display region is positioned without protruding from the second substrate in the plan-view of the first substrate, the seal member is disposed between the first substrate and the second substrate, and the seal member is formed continuously around the entire display region without the use of a plug; wherein the first substrate includes a protruding region which protrudes over the second substrate in the plan-view of the first substrate and a plurality of conductive portions; and the plurality of wiring lines extend onto the protruding region across the seal member without connecting to conductive points, as claimed. Paragraphs 193-207 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

193. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device.

3273a1L-01 Vizio 70 model E70-F LOM

3273a1L-09 Vizio 70 model E70-F LOM


VIZIO
39 Tesla Irvine, CA 92618
WWW.VIZIO.COM
Television / Téléviseur / Televisor de pantalla plana de cristal líquido (LCD) con iluminación de diodo emisor de luz (LED)
Model / Modèle / Nº de Modelo: E70-F3
Input / Entrée / Entrada:
120 V ~ 60 Hz 2.5 A
Part No. / Numéro de pièce / Nº de parte:
10260191231
Serial No. / Numéro de série / Nº de serie:
LFTRXDLU4900220
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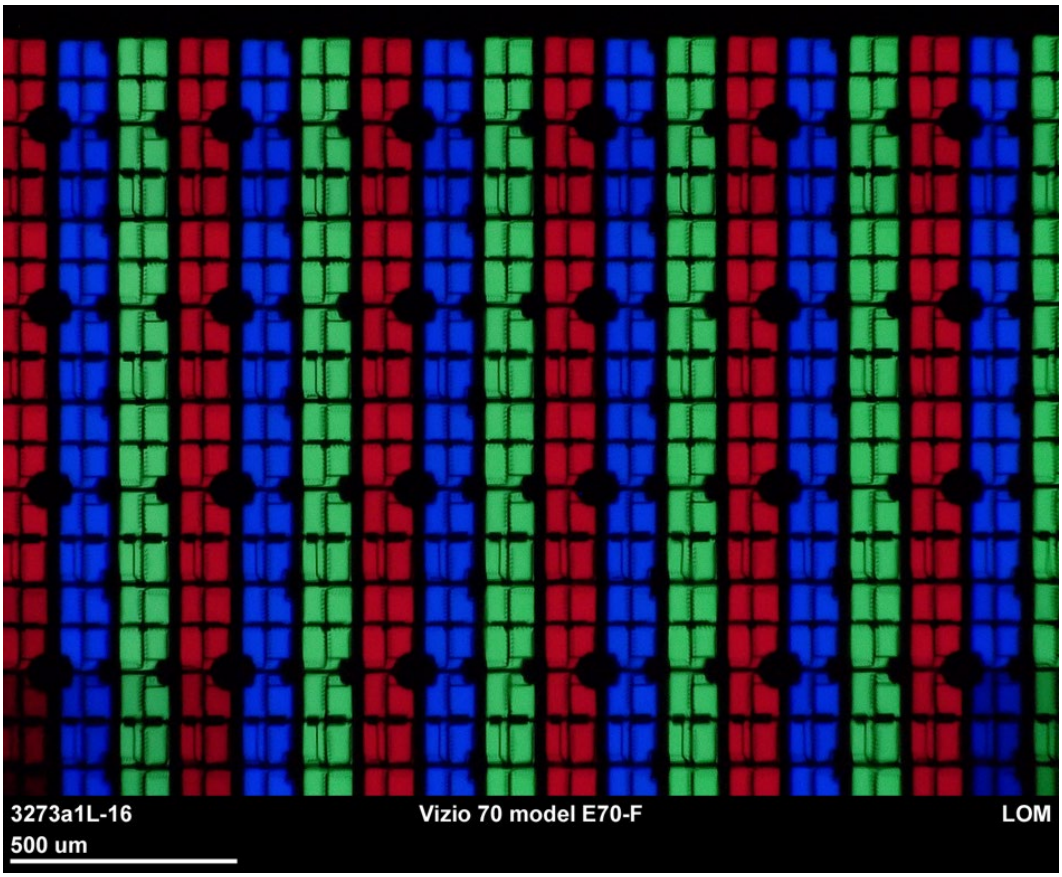
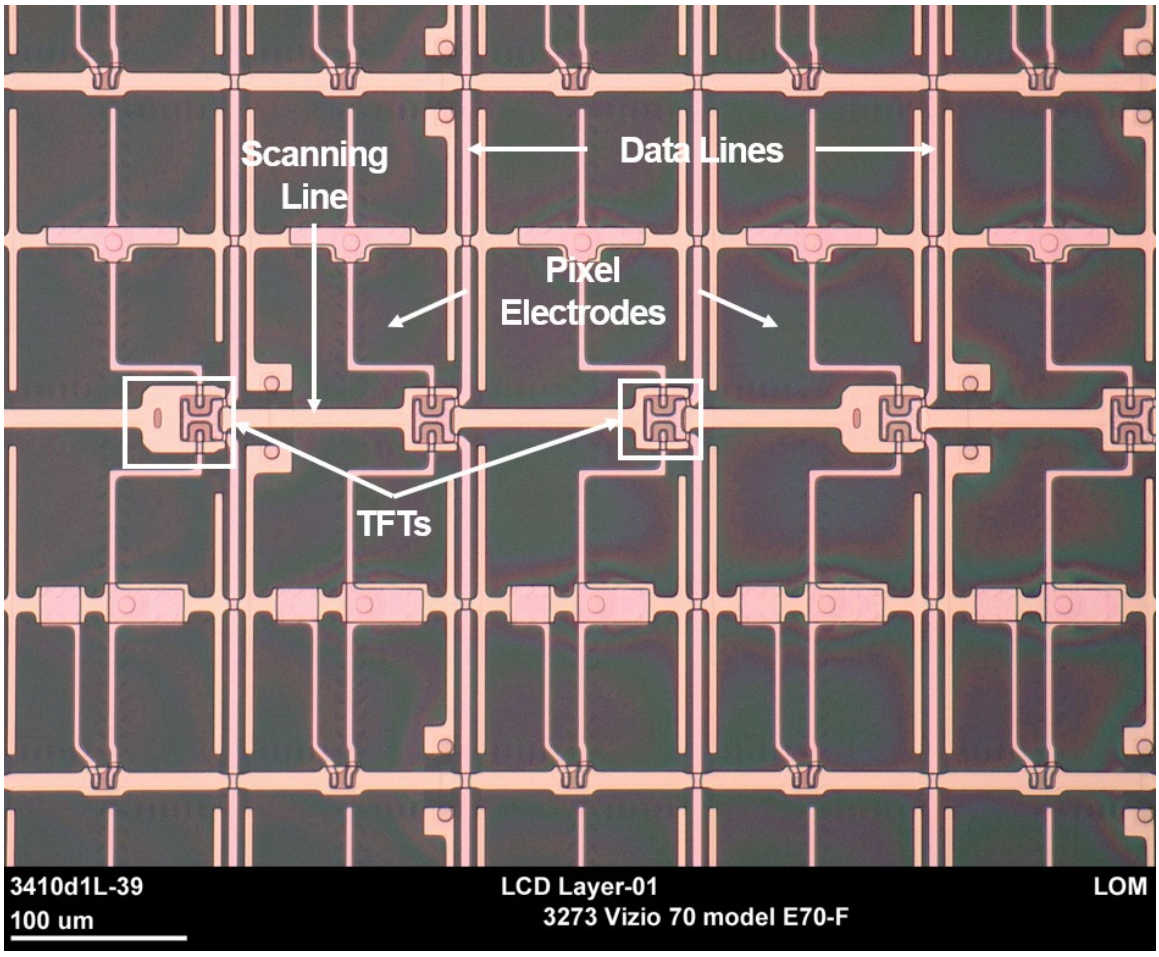
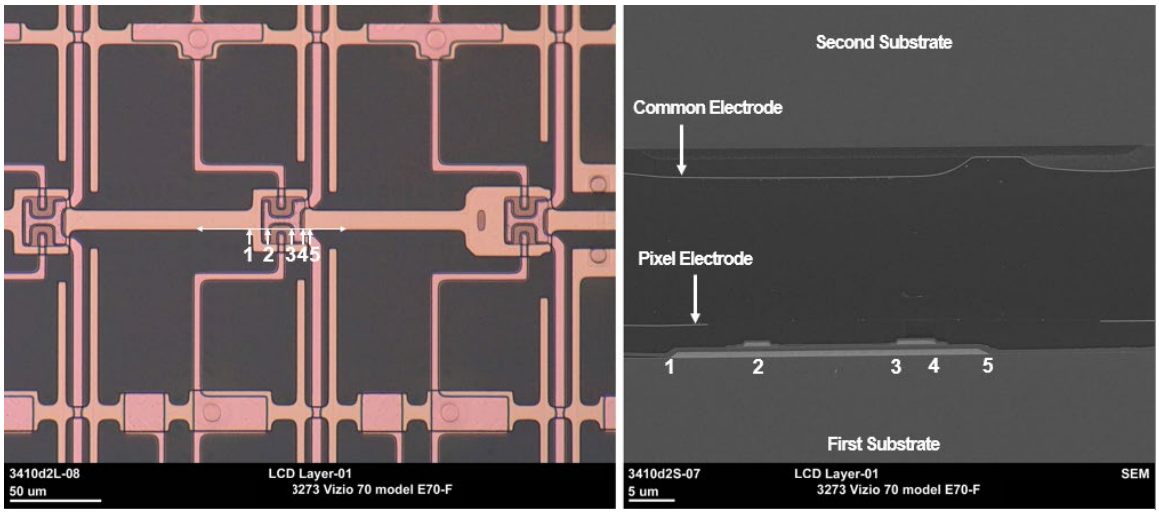
DOLBY AUDIO™
HDMI
dts Studio Sound II
ENERGY STAR
FC
E342330 Audio/Video Apparatus 3YX7
LISTED
Energy Verified
Rendement
Énergétique Vérifié
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR
PRECAUCIÓN RIESGO DE DESCARGA ELÉCTRICA NO ABRIR
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
This class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
Cable-Compatible Analog and Digital Television Receiving Apparatus - Appareil de réception de télévision analogique et numérique câblocompatible, Canada BETS-7 / NTMR-7
Sintoniza transmisiones de televisión digital conforme al estándar A/53 del Advanced Television Systems Committee, Inc (ATSC)
This device contains transmitter module: WBUA31 or WCT8LA2701
FCC ID: RX3-WBUA31 or 2AC23-WCT6LA2701
IC: 2878F-WBUA31 or 12200A-WCT6LA2701
MADE IN MEXICO / FABRIQUÉ AU MEXIQUE / HECHO EN MÉXICO
3273a1L-11
Vizio 70 model E70-F
LOM

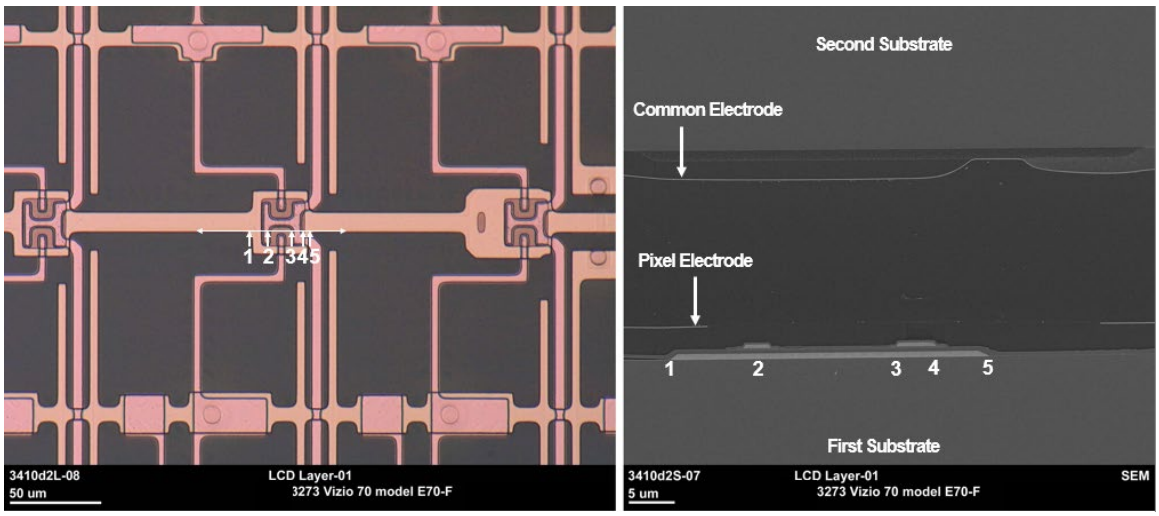

3273a1L-16
500 um
Vizio 70 model E70-F
LOM

194. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a first substrate including a plurality of pixel electrodes, a plurality of active elements and a plurality of wiring lines that connect to the plurality of active elements, wherein the plurality of active elements are thin film transistors disposed on the first substrate.

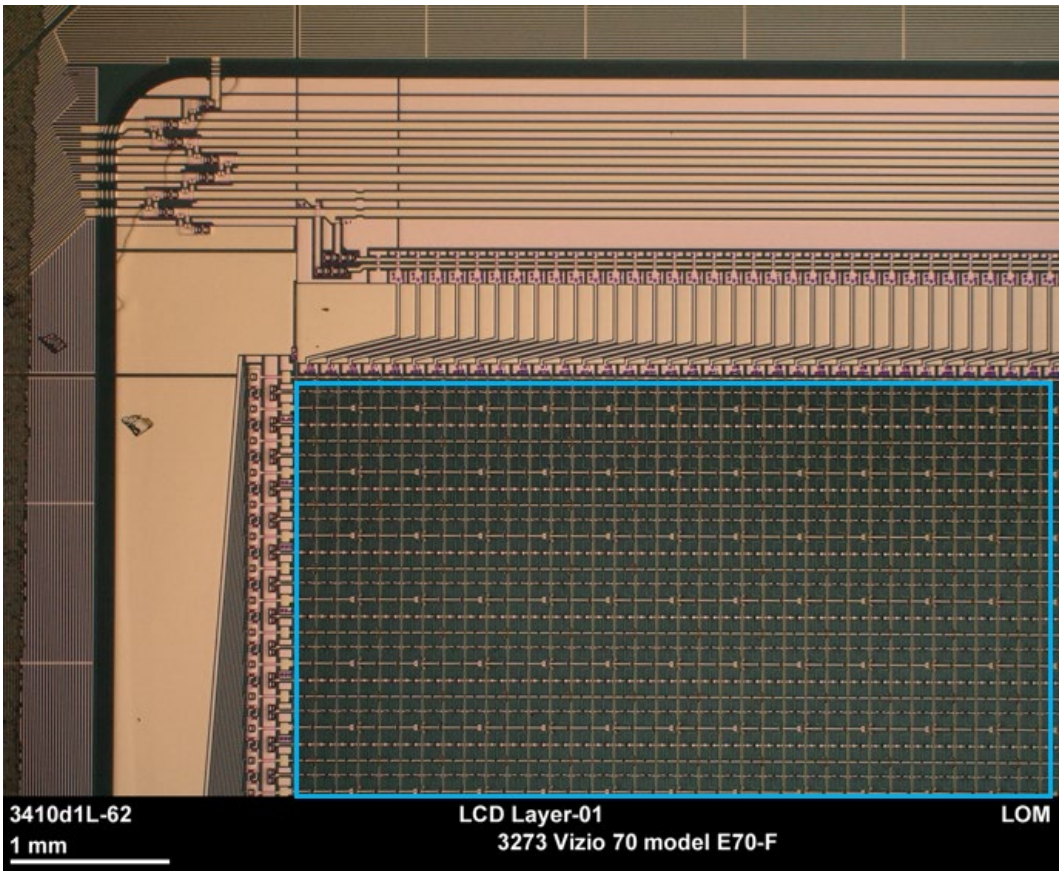




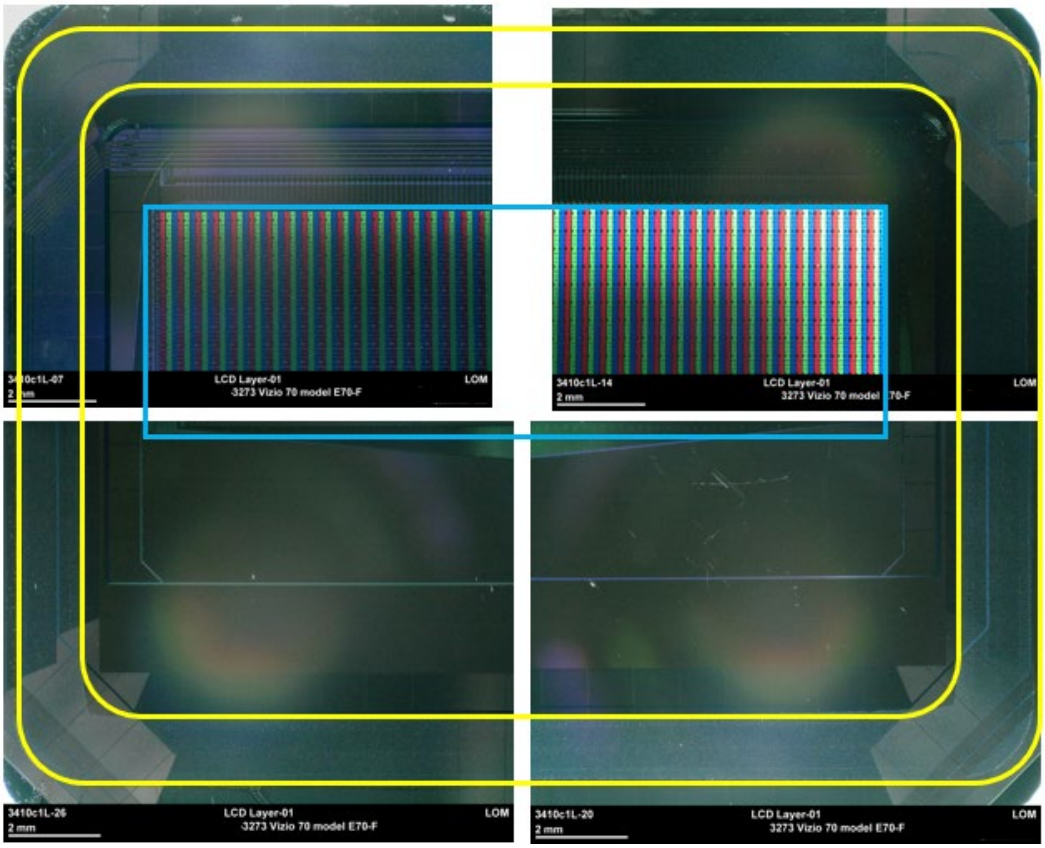
195. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a second substrate including a common electrode, wherein the common electrode is disposed on the second substrate.



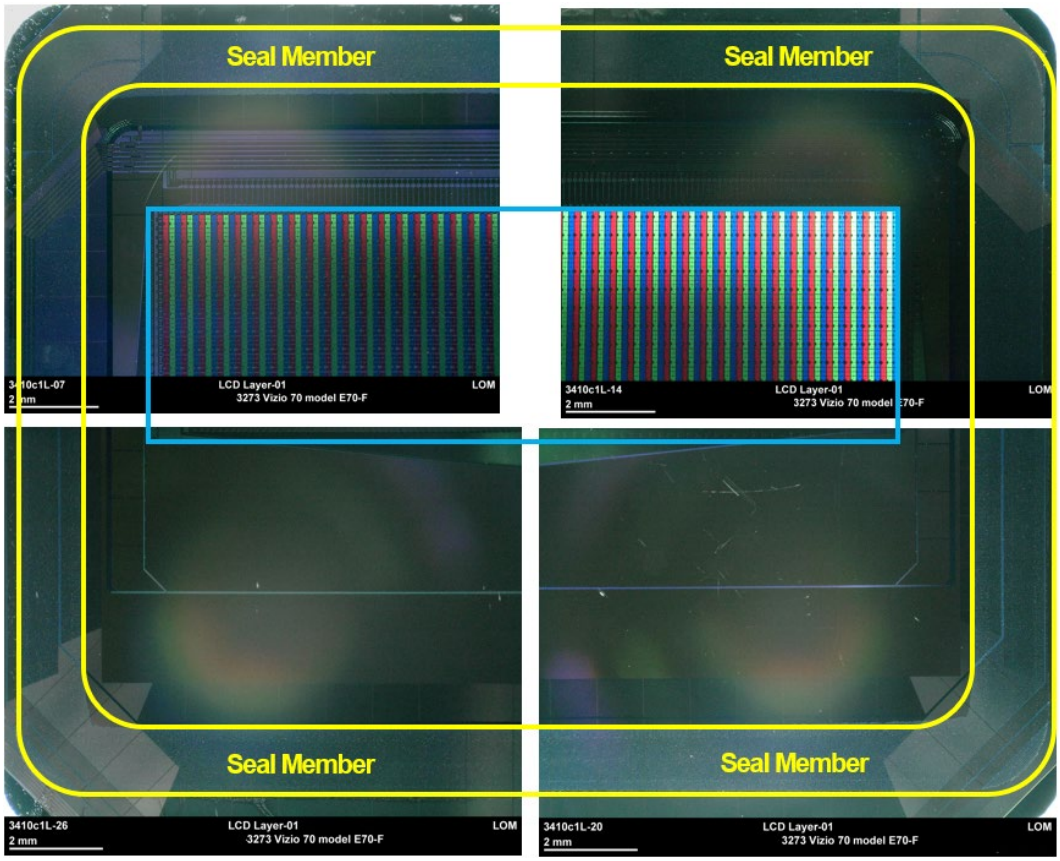
196. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a display region (blue box) in which the plurality of pixel electrodes and the plurality of active elements are aligned in a plan-view of the first substrate.

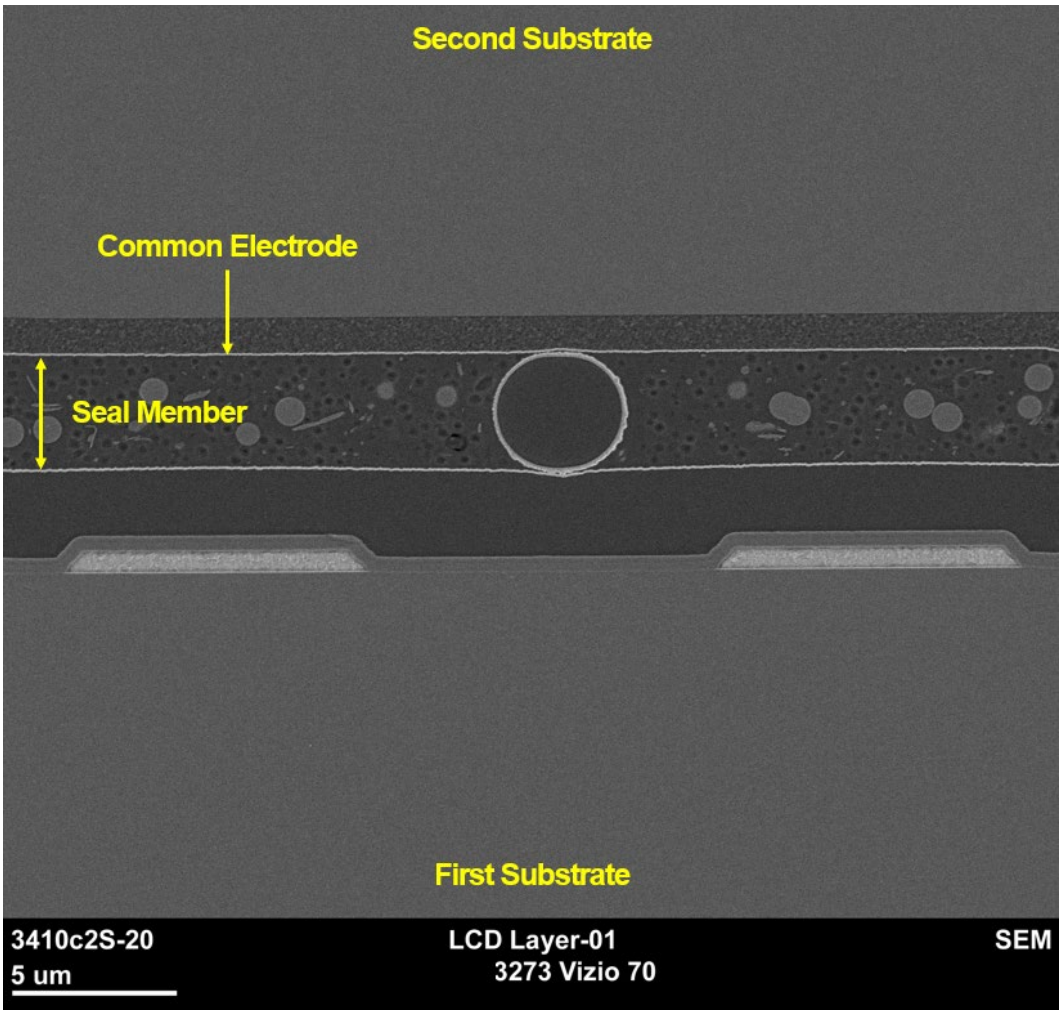


197. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a seal region (yellow ring) positioned around the display region (blue box) in the plan-view of the first substrate and forming a closed-ring shape in which the display region is disposed.

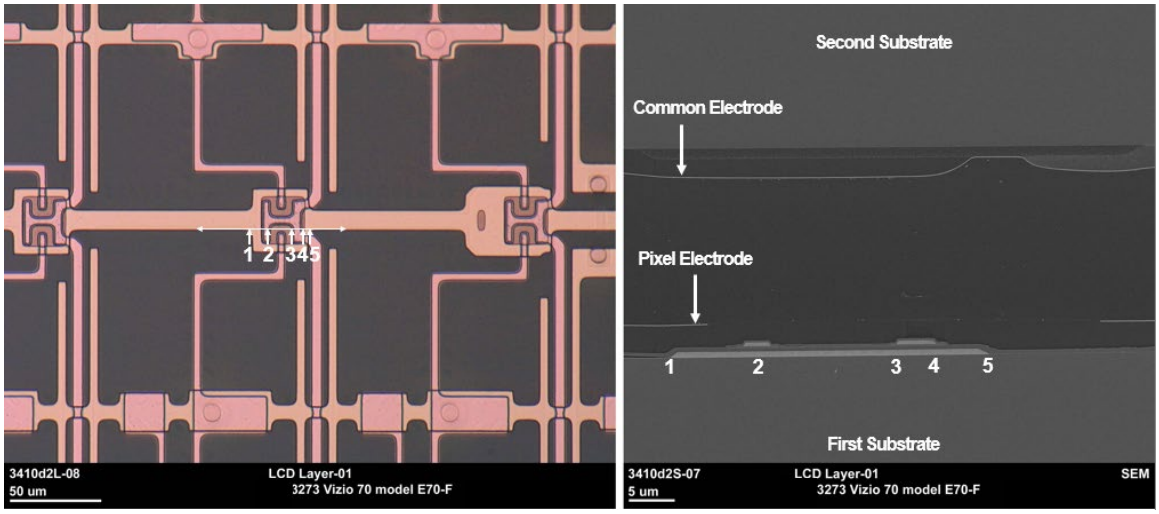


198. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a seal member being disposed in the seal region and bonding the first substrate and the second substrate so that the common electrode faces the plurality of pixel electrodes, the seal member forming a closed-ring shape in which the display region is positioned without protruding from the second substrate in the plan-view of the first substrate, the seal member is disposed between the first substrate and the second substrate, and the seal member is formed continuously around the entire display region without the use of a plug.


Seal Member
Seal Member
Seal Member
Seal Member
3410c1L-07
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-14
2 mm
LCD Layer-01
3273 Vizio 70 model
LOM
3410c1L-26
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-20
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM

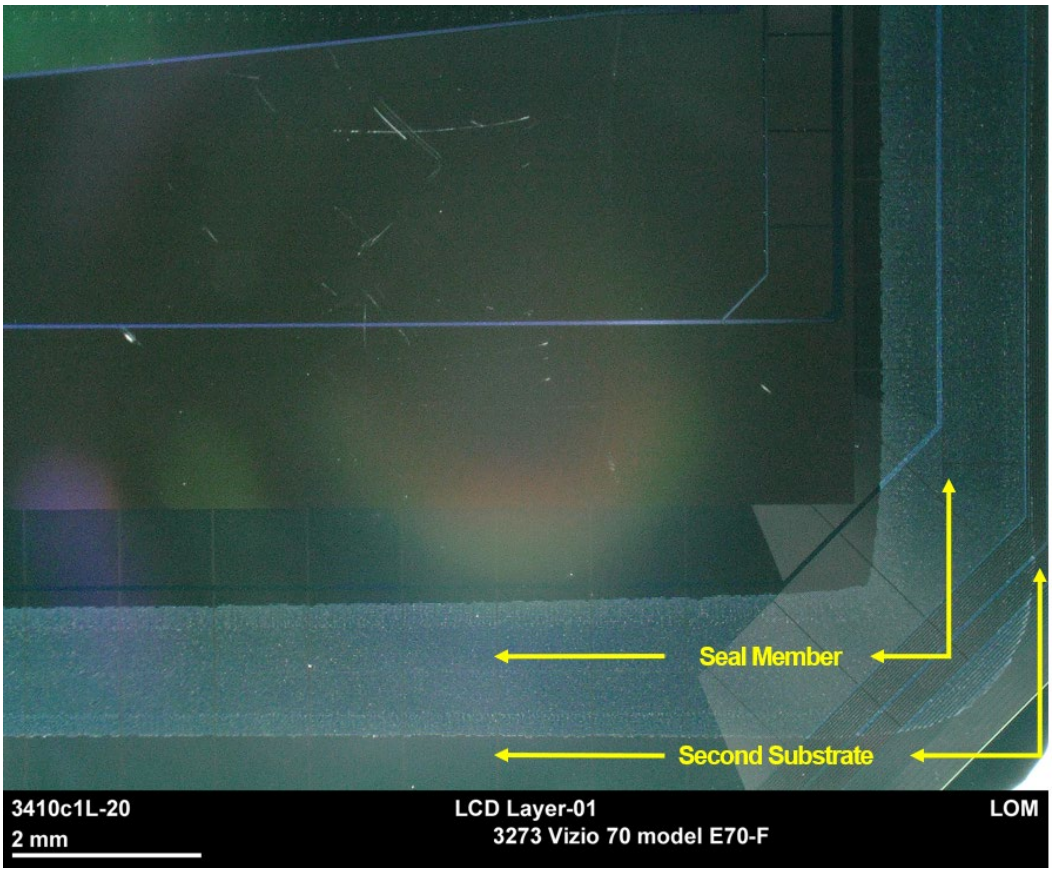


199. The common electrode faces the plurality of pixel electrodes:

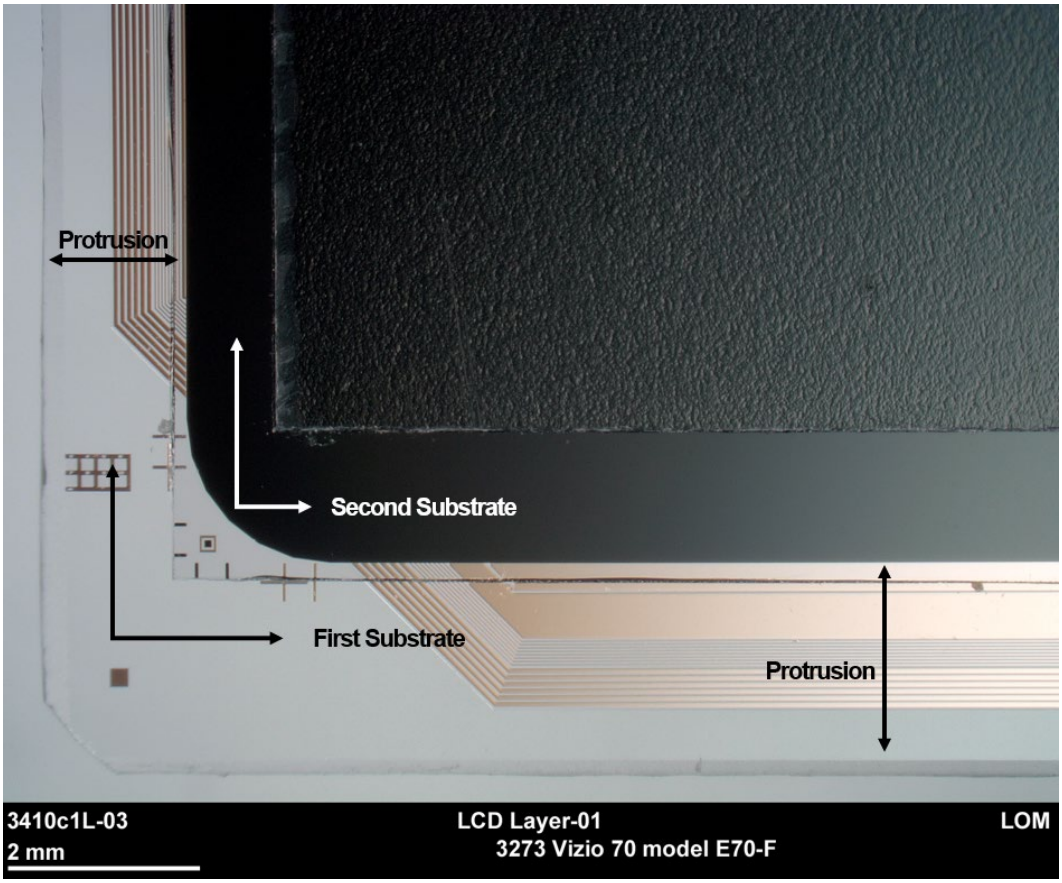


200. The seal member forms a closed-ring shape in which the display region is

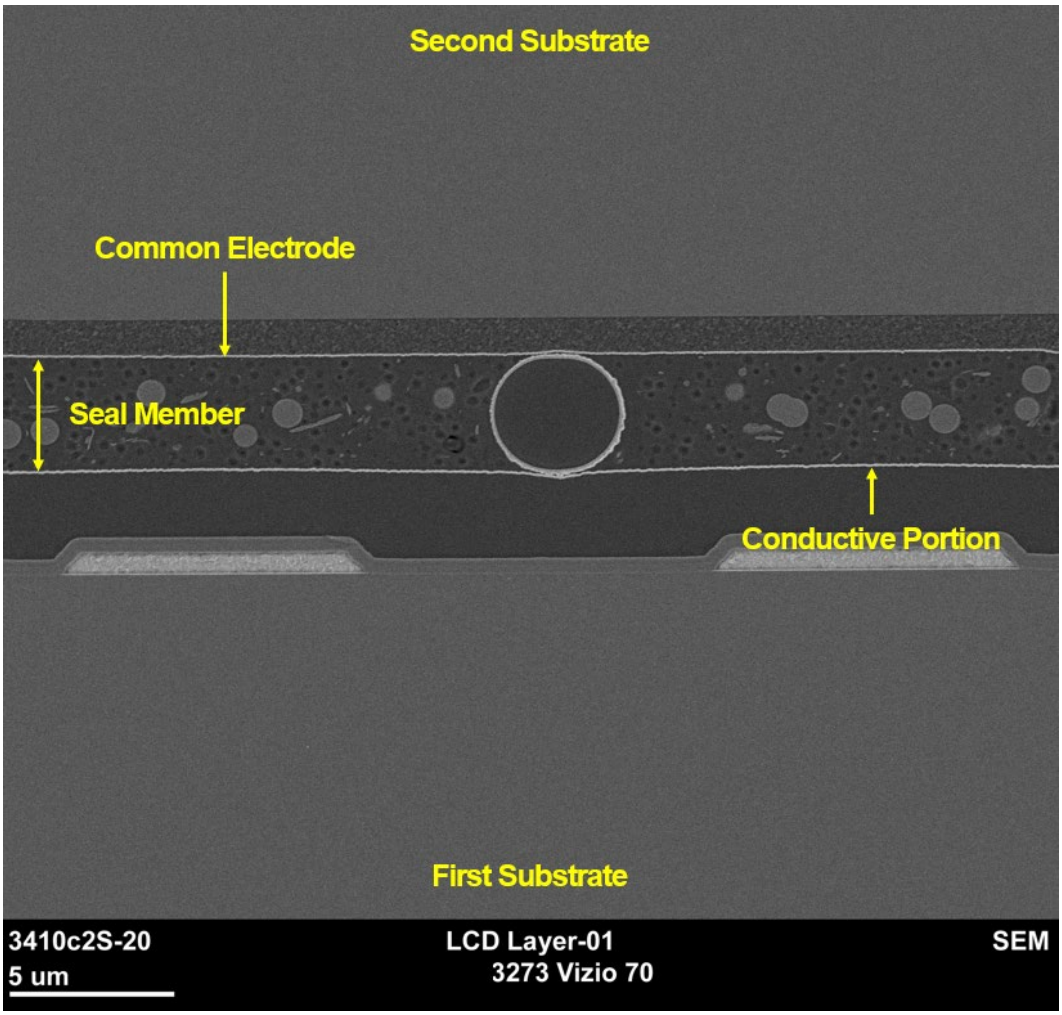
positioned without protruding from the second substrate in the plan-view of the first substrate:



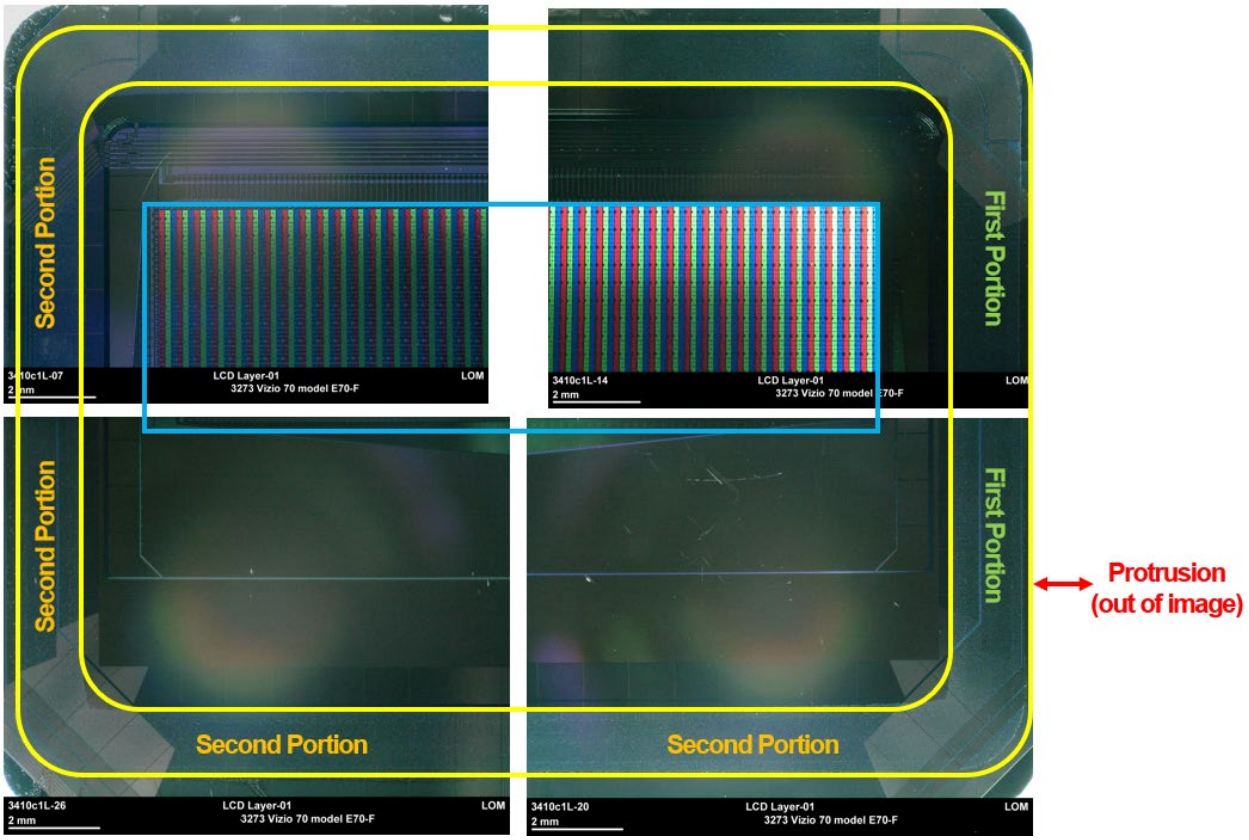
201. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a first substrate, wherein the first substrate includes a protruding region which protrudes over the second substrate in the plan-view of the first substrate and a plurality of conductive portions.



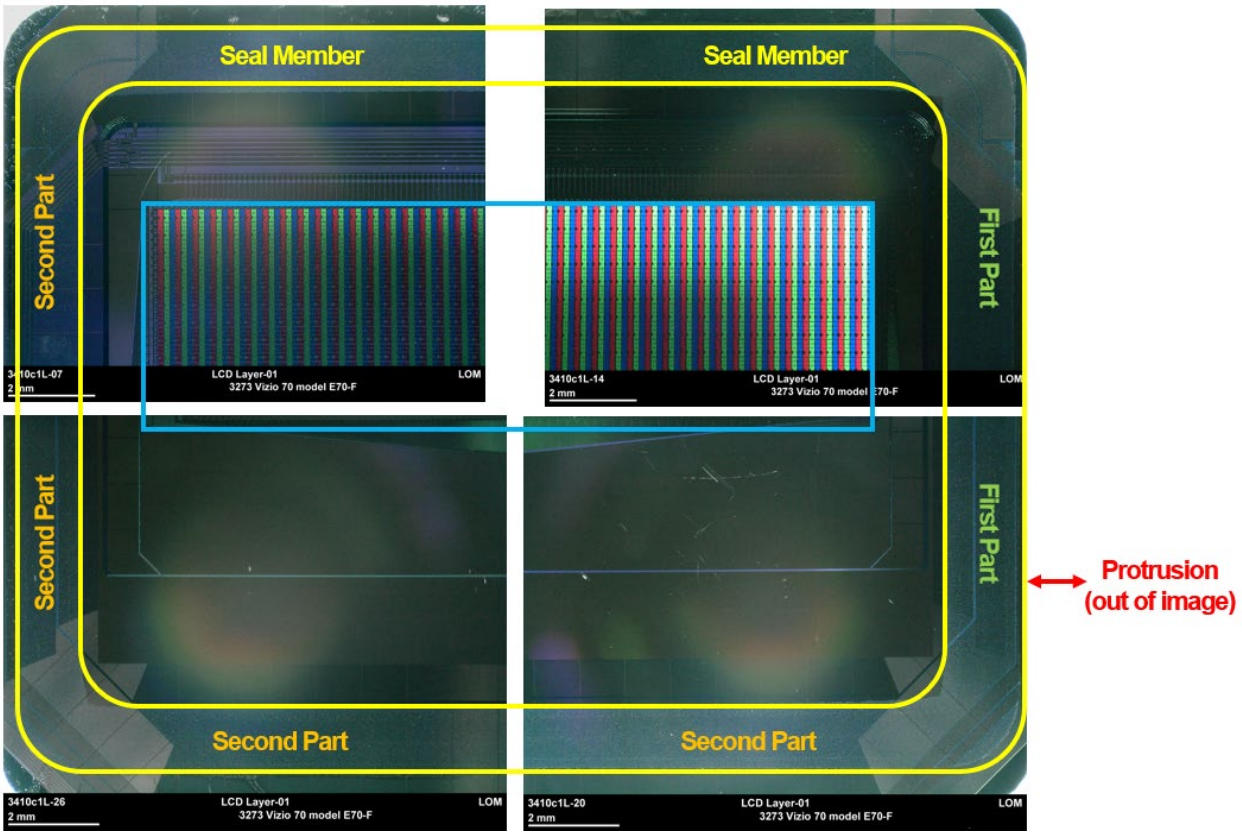
202. The first substrate includes a plurality of conductive portions.

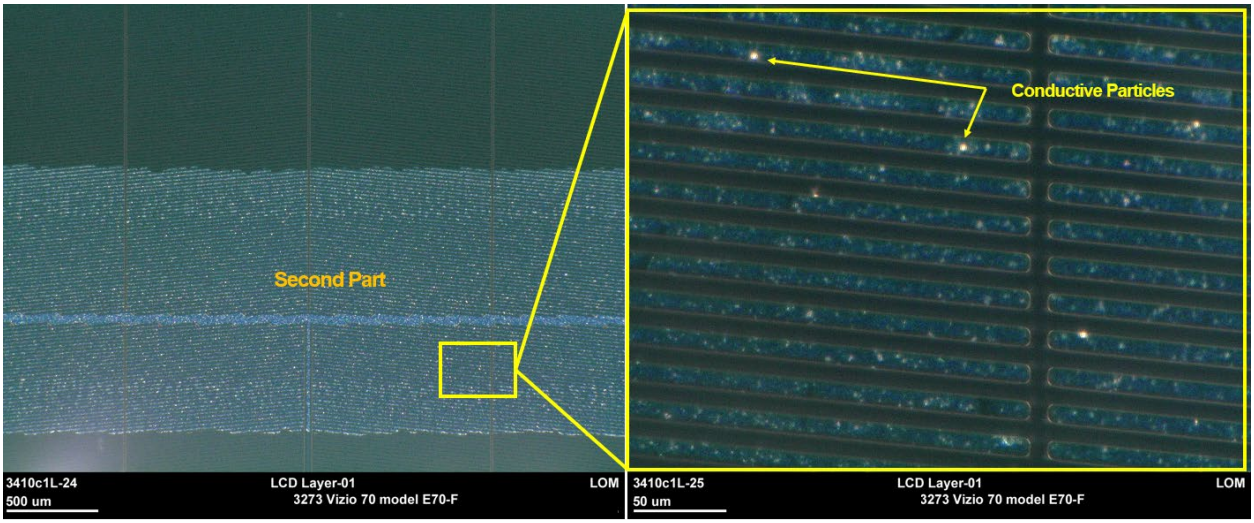


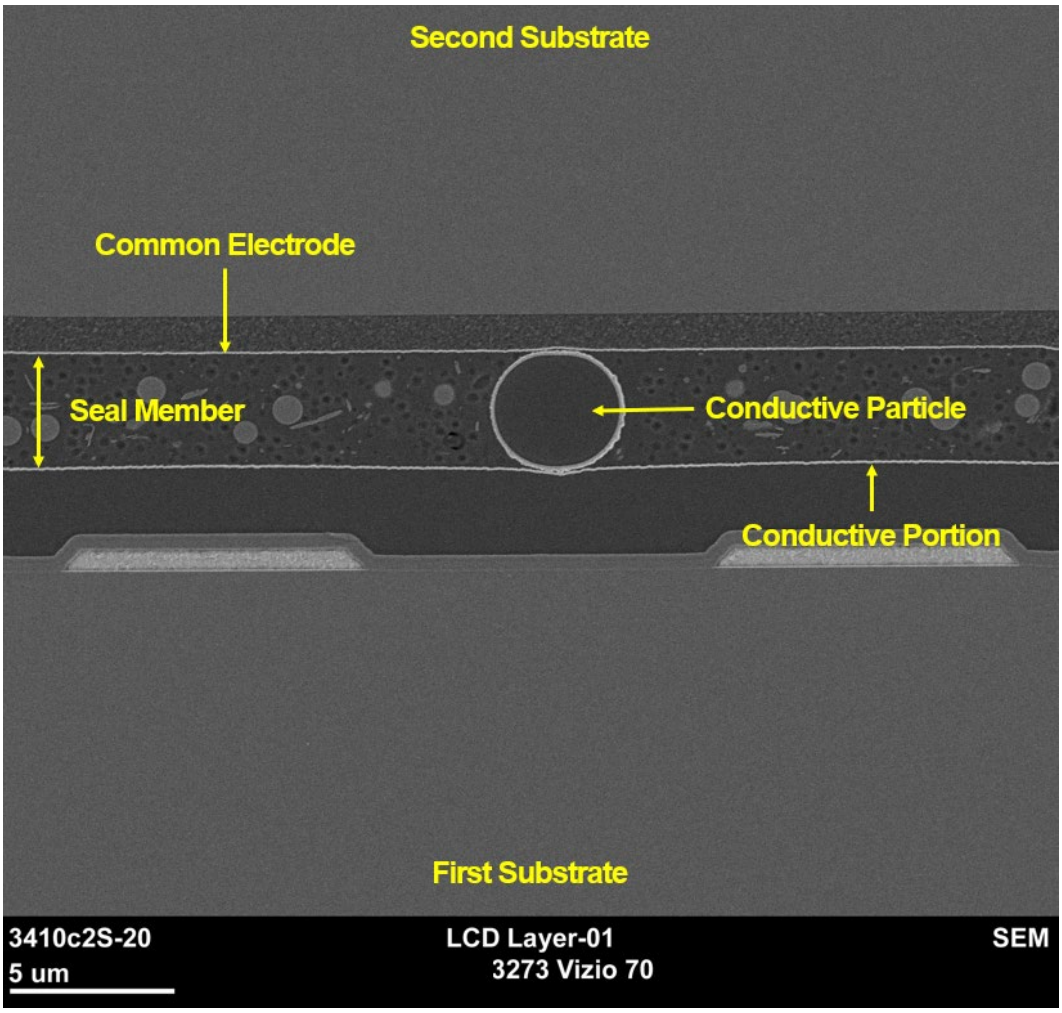
203. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a seal region, the seal region includes a first portion and a second portion, the first portion is positioned at least between the display region and the protruding region, and the second portion is positioned at least opposite to the protruding region with respect to the display region.



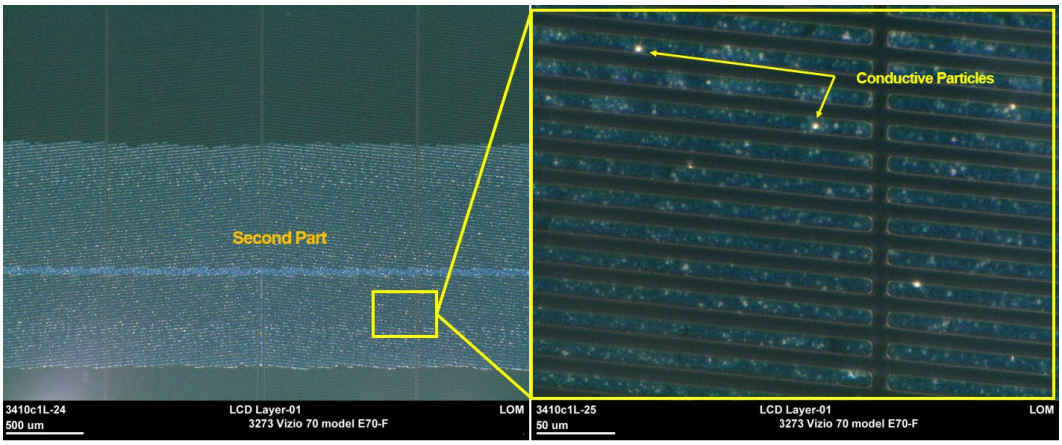
204. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a seal member, the seal member includes a first part and a second part, the first part of the seal member is positioned on the first portion and the second part of the seal member is positioned on the second portion, and the second part of the seal member includes a plurality of conductive particles.

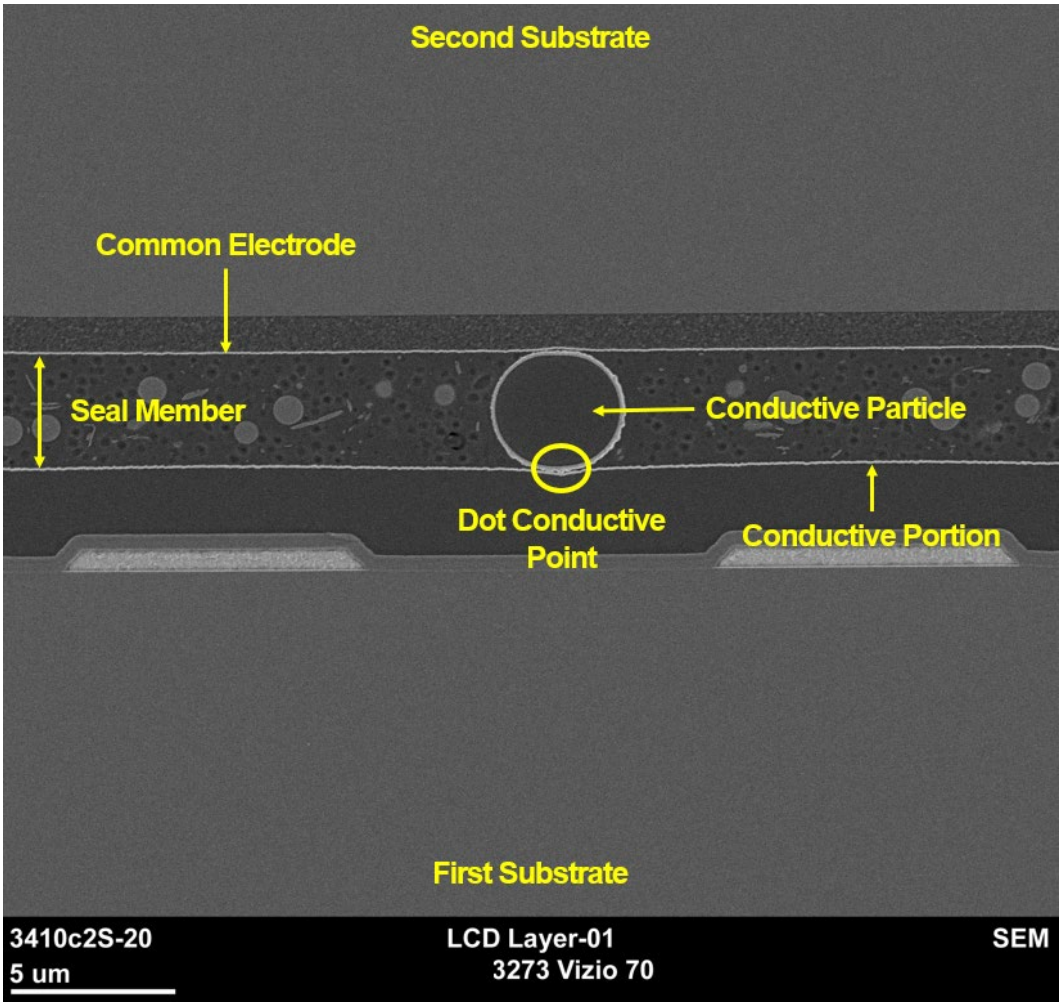

Seal Member
Seal Member
Second Part
First Part
Second Part
First Part
Protrusion
(out of image)
Second Part
Second Part
3410c1L-07
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-14
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-26
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-20
2 mm
LCD Layer-01
3273 Vizio 70 model E70-F
LOM


Conductive Particles
Second Part
3410c1L-24
500 um
LCD Layer-01
3273 Vizio 70 model E70-F
LOM
3410c1L-25
50 um
LCD Layer-01
3273 Vizio 70 model E70-F
LOM



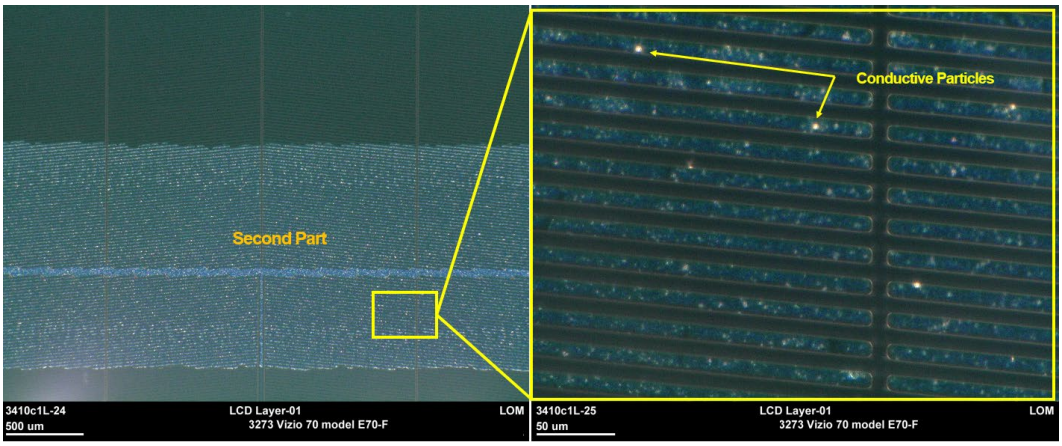
205. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a first substrate, a plurality of dot conductive points are disposed on the second portion of the first substrate, all of the plurality of the dot conductive points are electrically connected to the common electrode.



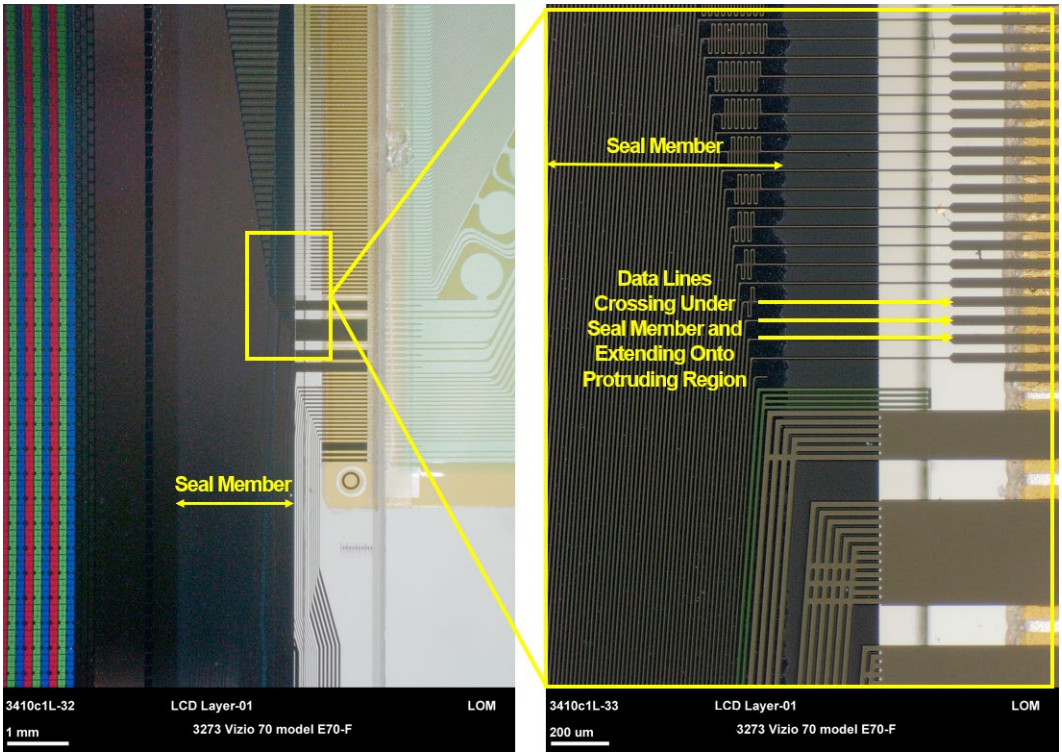


206. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising a plurality of dot conductive points, each of the plurality of the dot conductive points are spaced apart from

each other.



207. Sharp LCD panels and modules, including, for example, the Sharp LCD panel in the Vizio E70-F3 TV, comprise a display device comprising wiring lines, the plurality of wiring lines extend onto the protruding region across the seal member without, on information and belief, connecting to the dot conductive points.



208. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the ’606 patent

and the infringement alleged herein as of on or around September 15, 2022, when Longitude provided notice to Sharp.

209. Sharp has indirectly infringed and continues to indirectly infringe the ’606 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of the ’606 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

210. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’606 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’606 patent.

211. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

212. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp’s direct and indirect purchasers directly infringe the ’606 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

213. Sharp has induced others’ direct infringement despite actual notice that the

Accused Instrumentalities infringe the '606 patent. As of at least September 15, 2022, Sharp knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

214. Sharp has indirectly infringed and continues to indirectly infringe the '606 patent by contributing, in violation of 35 U.S.C. § 271(c), to the direct infringement of the '606 patent by others in the United States, the State of Texas, and the Eastern District of Texas, specifically, by offering to sell, selling, and/or importing into the United States components (Accused Sharp LCD Modules) of a claimed electronic devices.

215. The above-described acts of infringement have caused injury and damage to Longitude.

216. Sharp's infringement has been willful.

217. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT VII: INFRINGEMENT OF U.S. PATENT NO. 10,181,462

218. Pursuant to 35 U.S.C. § 282, the '462 patent is presumed valid.

219. Sharp has directly infringed and continues to directly infringe one or more claims of the '462 patent, in violation of 35 U.S.C. § 271(a).

220. The Accused Instrumentalities directly infringe at least claims 1-3, 5, and 7 of the ’462 patent.

221. Paragraphs 223-232 describe the manner in which the Accused Instrumentalities infringe claim 1 of the ’462 patent, by way of the exemplary Sharp LCD module in the Microsoft Surface Go 2-in-1 tablet and laptop (“Surface Go”). Longitude’s allegations of infringement are not limited to claim 1 or the exemplary product, and additional infringement will be identified and disclosed through discovery and in infringement contentions.

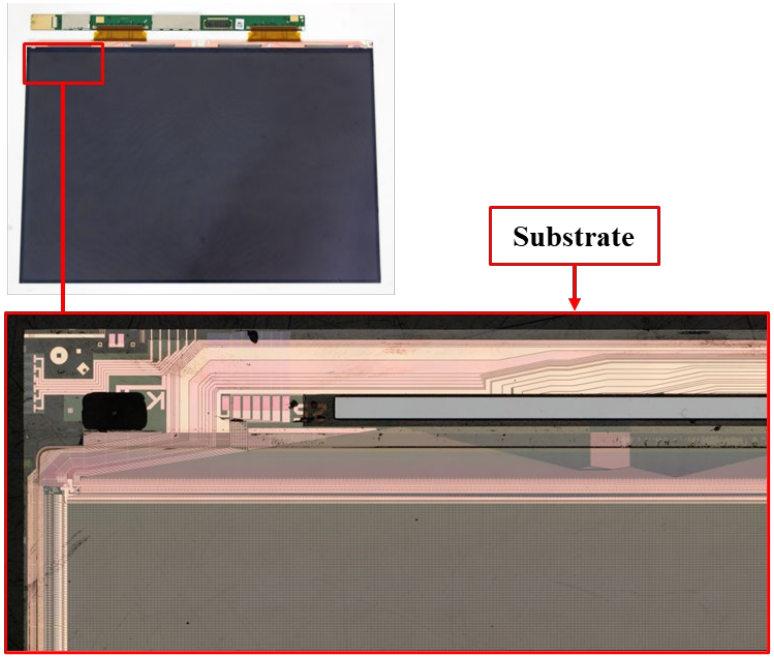
222. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Sharp LCD module in the Surface Go, in particular with regard to Accused Instrumentalities that include a first protective circuit arranged at a first corner of the display substrate and connected to the signal line at the first corner, a second protective circuit arranged at a second corner of the display substrate and connected to a power line at the second corner, wherein the driving circuit is positioned between the first and second protective circuits. Paragraphs 223-232 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

223. The LCD module in the Surface Go is a Sharp LCD module, as indicated by “LQ” in the LCD module part number.

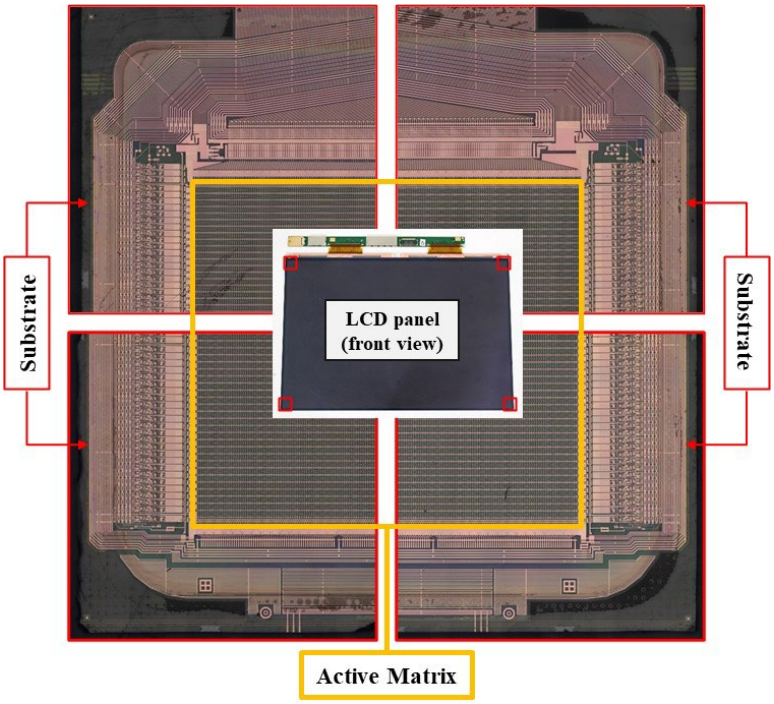
224. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise a display device.

225. Sharp LCD modules, including, for example, the Sharp LCD module in the

Surface Go, comprise a substrate.

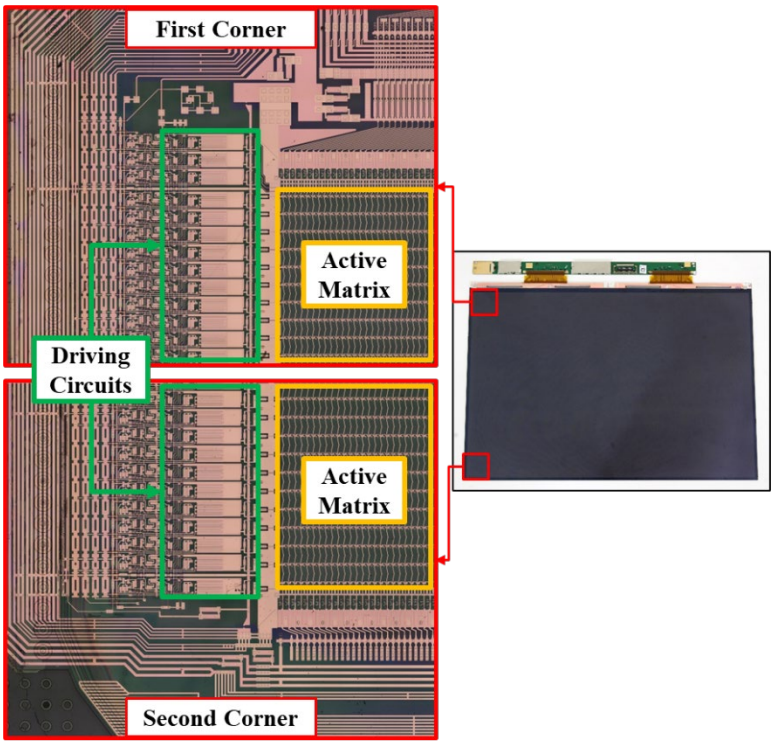


226. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise an active matrix arranged on the substrate.

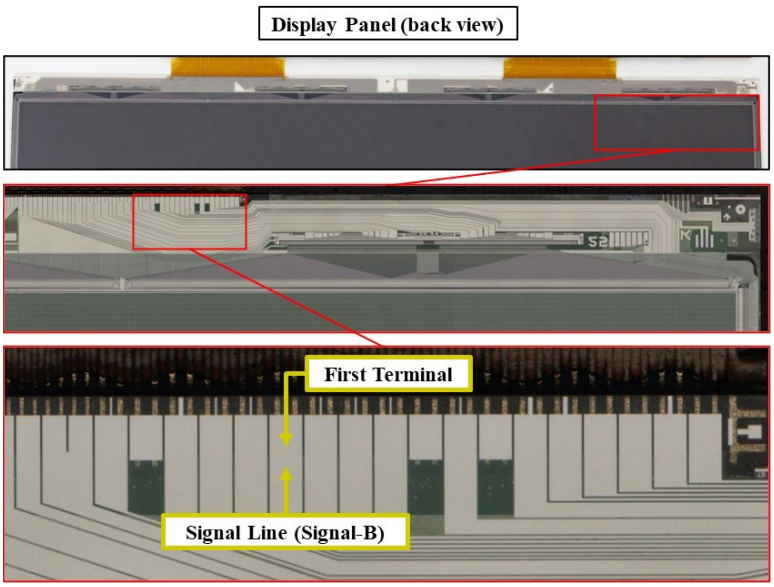


227. Sharp LCD modules, including, for example, the Sharp LCD module in the

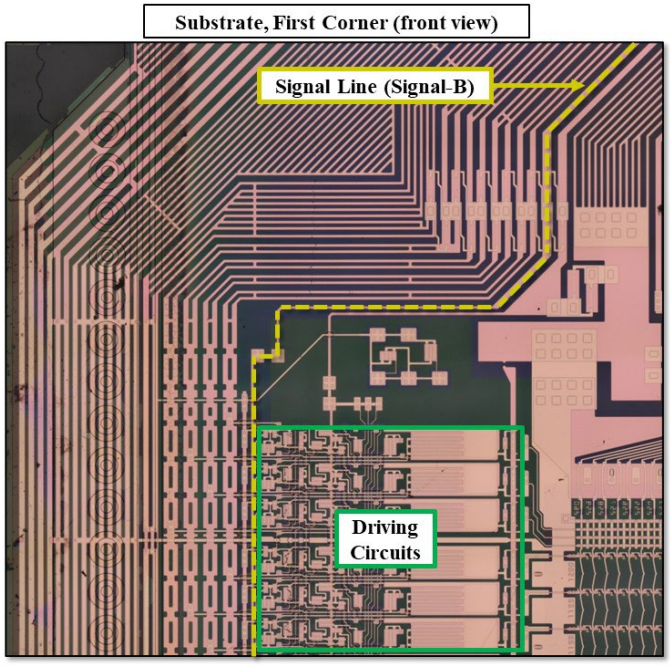
Surface Go, comprise a driving circuit arranged along one side interposed between a first corner of the substrate and a second corner of the substrate at a peripheral area that surrounds the active matrix.

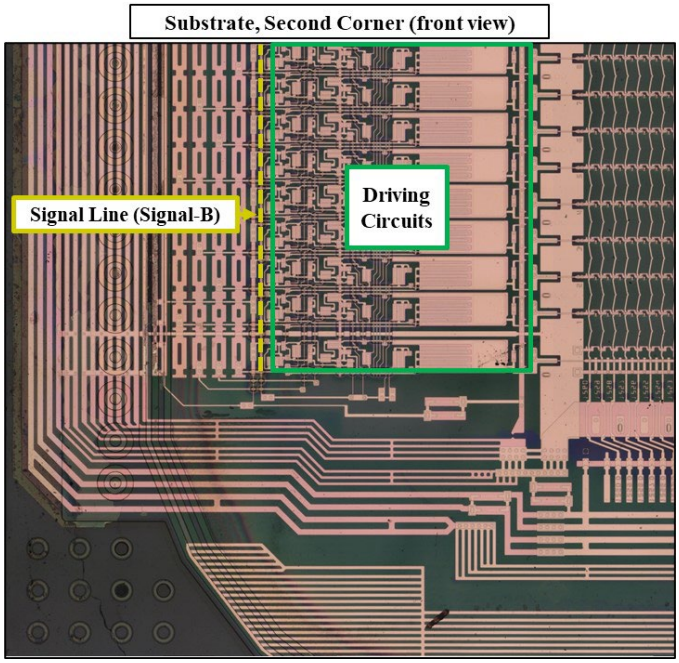


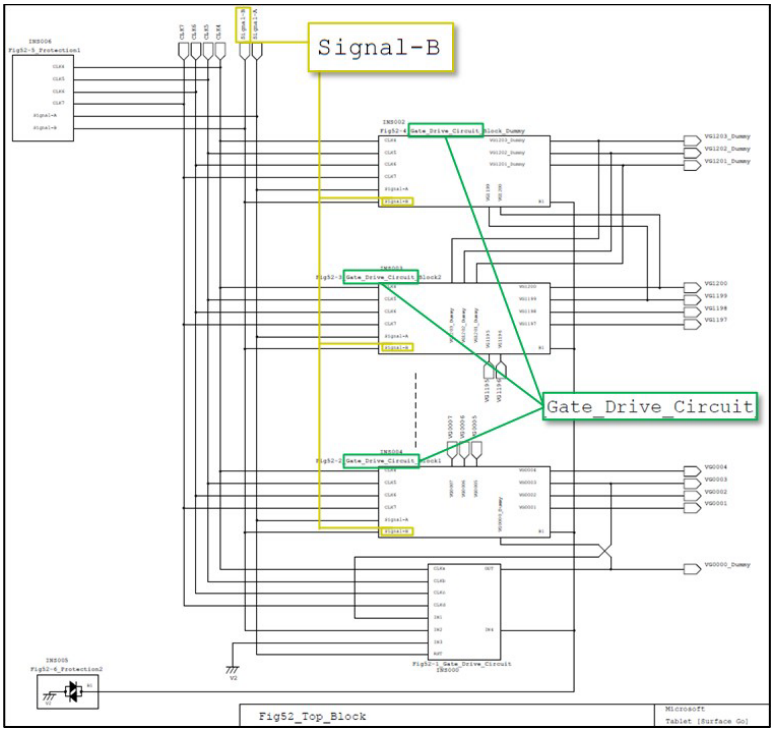
228. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise a signal line connected to a first terminal and the driving circuit and supplying a driving signal to the driving circuit.



(light areas are wirings)

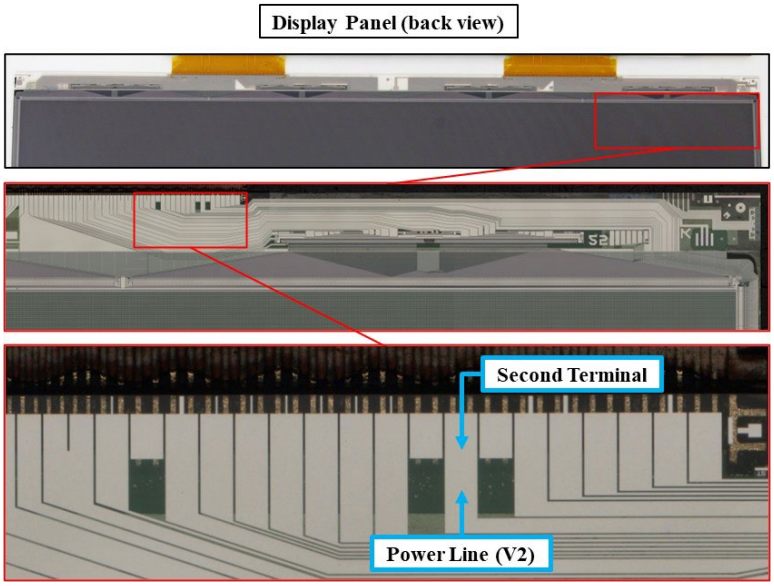




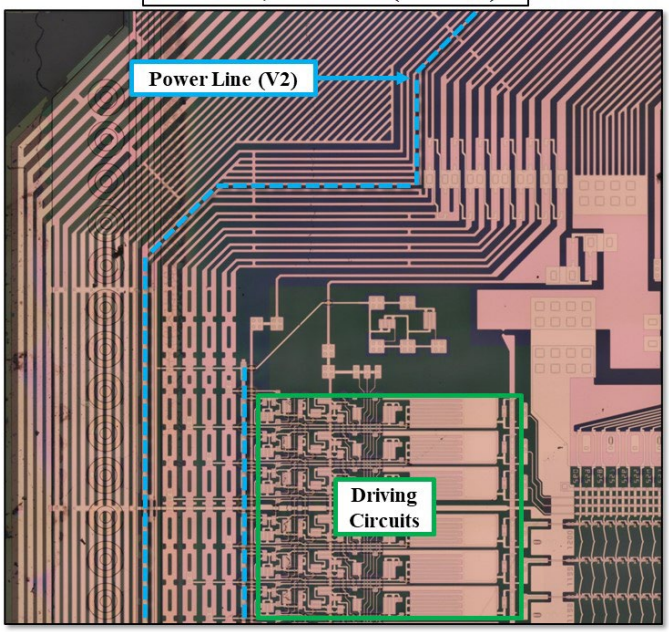


229. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise a power line connected to a second terminal and the driving circuit, the power line being arranged along the one side at the peripheral area and supplying a

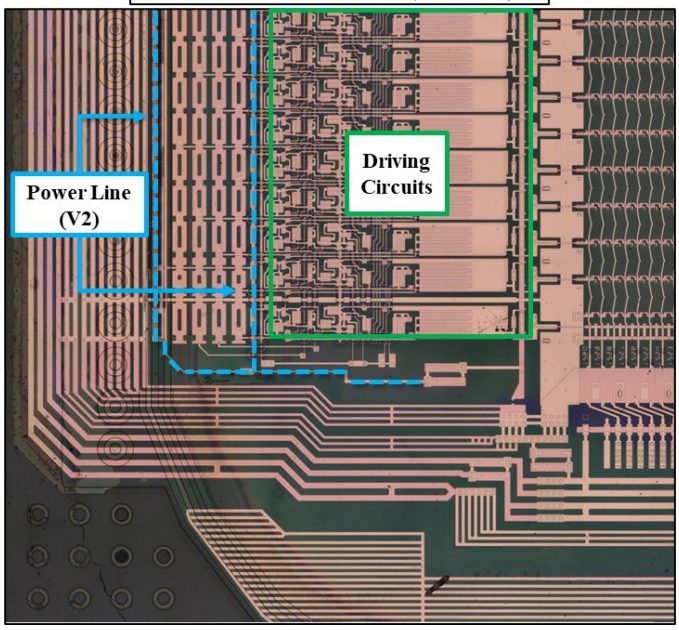
driving voltage to the driving circuit.

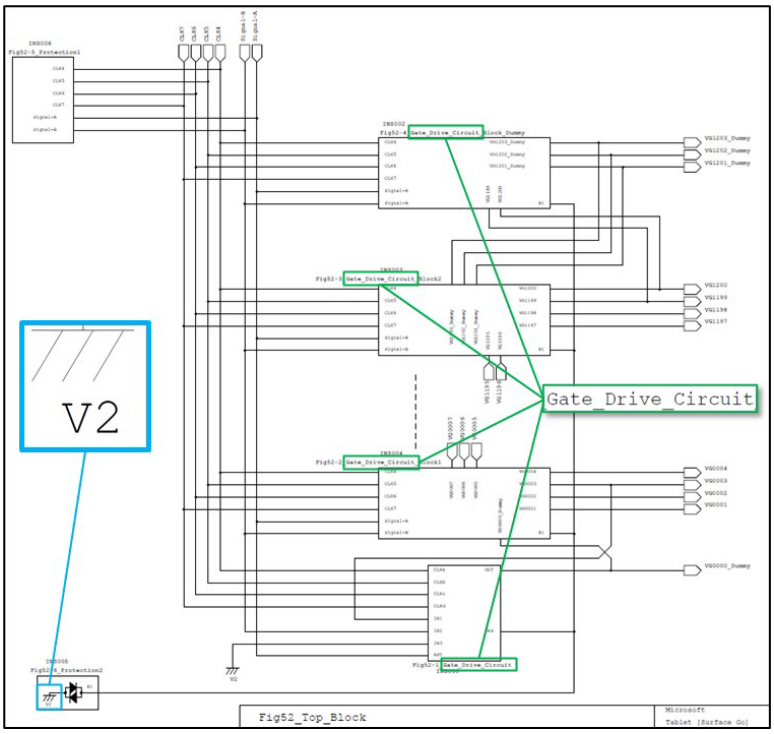


Substrate, First Corner (front view)

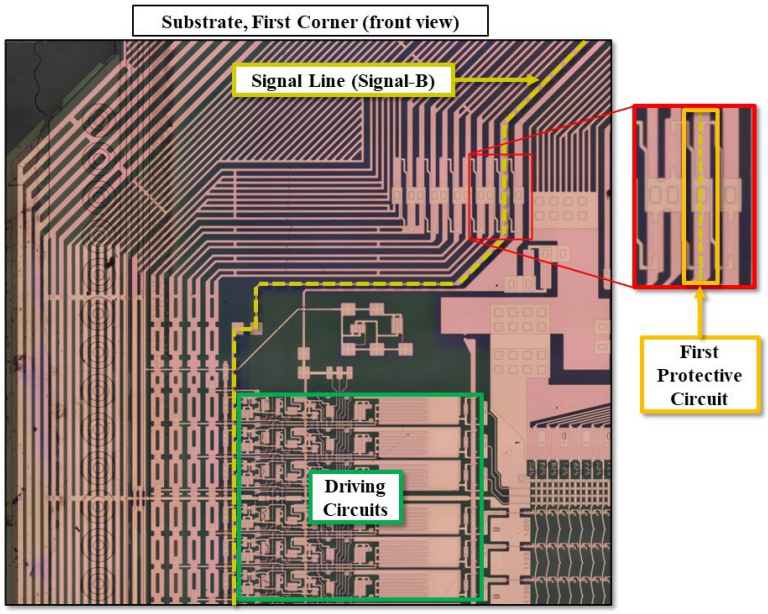


Substrate, Second Corner (front view)



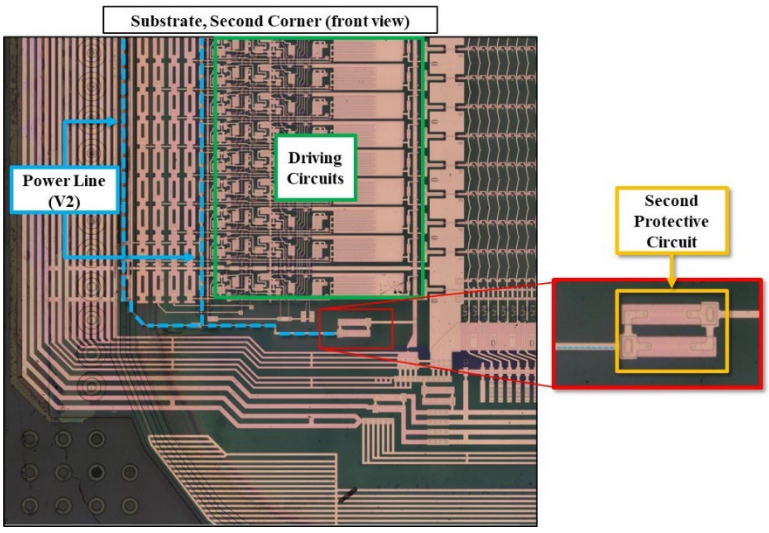


230. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise a first protective circuit arranged at the first corner and connected to the signal line at the first corner.

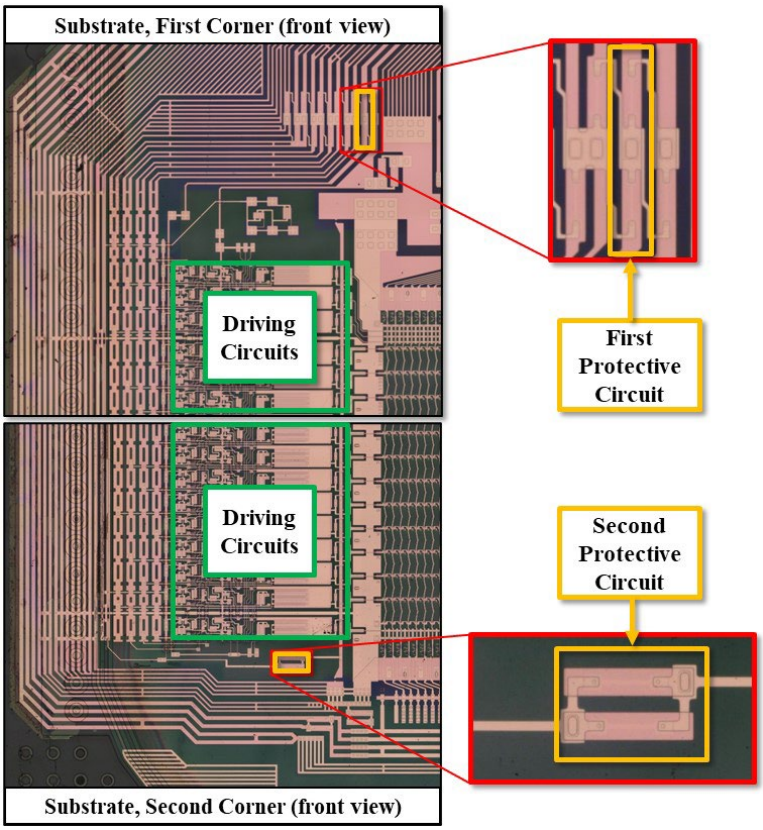


231. Sharp LCD modules, including, for example, the Sharp LCD module in the

Surface Go, comprise a second protective circuit arranged at the second corner and connected to the power line at the second corner.



232. Sharp LCD modules, including, for example, the Sharp LCD module in the Surface Go, comprise a display device, wherein the driving circuit is positioned between the first protective circuit and the second protective circuit.



233. Sharp had actual notice pursuant to 35 U.S.C. § 287(a) of the ’462 patent and the infringement alleged herein as of on or around August 23, 2019, when Longitude provided notice to Sharp.

234. Sharp has indirectly infringed and continues to indirectly infringe the ’462 patent by actively inducing, in violation of 35 U.S.C. § 271(b), the direct infringement of the ’462 patent by others in the United States, the State of Texas, and the Eastern District of Texas.

235. Sharp has induced, and continues to induce, through affirmative acts, its customers and other third parties to directly infringe the ’462 patent by using, offering to sell, selling within the United States, and/or importing into the United States Accused Instrumentalities that infringe the ’462 patent.

236. On information and belief, Sharp actively promoted the Accused Instrumentalities for the U.S. market, as alleged here.

237. Sharp knew that its customers would offer to sell and/or sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Sharp specifically intended its customers to purchase those Accused Instrumentalities from Sharp and offer to sell and/or sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Sharp's direct and indirect purchasers directly infringe the '462 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, offering to sell such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

238. Sharp has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the '462 patent. As of at least August 23, 2019, Sharp knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

239. The above-described acts of infringement have caused injury and damage to Longitude.

240. Sharp's infringement has been willful.

241. Longitude is entitled to recover damages sustained as a result of Sharp's willful infringement in an amount subject to proof at trial, but in no event less than a reasonable royalty.

JURY TRIAL DEMANDED

242. Longitude demands a trial by jury on all claims and issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Longitude Licensing Limited respectfully requests that this Court:

A. Enter judgment that Sharp has infringed one or more claims of each of the Longitude Patents, and that such infringement was willful;

B. Enter an order, pursuant to 35 U.S.C. § 284, awarding to Plaintiff Longitude Licensing Limited monetary relief in an amount adequate to compensate for Sharp's infringement of the Longitude Patents, in an amount to be determined at trial, but not less than a reasonable royalty, as well as pre- and post-judgment interest and costs and enhanced damages for Sharp's willful infringement of the Longitude Patents;

C. Enter an order, pursuant to 35 U.S.C. § 285, declaring this to be an exceptional case and thereby awarding to Plaintiff Longitude Licensing Limited its reasonable attorneys' fees;

D. Enter an order awarding to Plaintiff Longitude Licensing Limited a permanent injunction enjoining Sharp's ongoing patent infringement; and

E. Enter an order awarding to Plaintiff Longitude Licensing Limited such other and further relief, whether at law or in equity, that this Court seems just, equitable, and proper.

Dated: April 11, 2023

Respectfully submitted,

s/ Aaron R. Fahrenkrog

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