

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

PHOTONIC IMAGING SOLUTIONS, INC.)	
)	
Plaintiff,)	
)	
v.)	Case No.
)	
LOREX TECHNOLOGY INC. and LOREX)	JURY TRIAL DEMANDED
CORPORATION,)	
)	
)	
Defendants.)	

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Photonic Imaging Solutions, Inc. (“Photonic Imaging” or “Plaintiff”), for its Complaint against Defendants Lorex Technology Inc. and Lorex Corporation (“Lorex” or “Defendants”) alleges as follows.

THE PARTIES

1. Photonic Imaging is a corporation organized and existing under the laws of the State of Texas, with its principal place of business located at 411 Theodore Fremd Ave., Suite 206S, Rye, NY 10580.

2. Upon information and belief, Defendant Lorex Technology Inc. is a corporation organized and existing under the laws of Canada, with its principal place of business located at 250 Royal Crest Court, Markham, Ontario, Canada L3R3S1. Lorex Technology Inc. may be served with process under the Delaware long arm statute, 10 *Del. C.* § 3104. Upon information and belief, Lorex Technology Inc. does business in Delaware directly or by selling its products through intermediaries.

3. Upon information and belief, Defendant Lorex Corporation is a corporation organized and existing under the laws of the State of Delaware, with its principal place of

business located at 3700 Koppers Street, Suite 504, Baltimore, MD 21227. Lorex Corporation may be served through its registered agent, The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801. Upon information and belief, Lorex Corporation does business in Delaware directly or by selling its products through intermediaries.

JURISDICTION

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

5. This Court has personal jurisdiction over Defendants. Defendants regularly conduct business and have committed acts of patent infringement and/or have induced acts of patent infringement by others in this judicial district and/or have contributed to patent infringement by others in this judicial district, the State of Delaware, and elsewhere in the United States.

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

7. Defendants are subject to this Court's jurisdiction pursuant to due process and/or the Delaware Long Arm Statute due at least to their substantial business in this State and judicial district, including (a) at least part of its past infringing activities, (b) regularly doing or soliciting business in Delaware, and/or (c) engaging in persistent conduct and/or deriving substantial revenue from goods and services provided to customers in Delaware.

PATENTS-IN-SUIT

8. On February 6, 2001, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,184,055 (the “’055 Patent”) entitled “CMOS Image Sensor with Equivalent Potential Diode and Method for Fabricating the Same,” naming Woodward Yang, Ju Il Lee, and Nan Yi Lee as inventors. A true and correct copy of the ’055 Patent is attached as Exhibit A.

9. On May 13, 2003, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,563,187 (the “’187 Patent”) entitled “CMOS Image Sensor Integrated Together with Memory Device,” naming Sang Hoon Park as inventor. A true and correct copy of the ’187 Patent is attached as Exhibit B.

10. On September 27, 2005, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,949,388 (the “’388 Patent”) entitled “CMOS Image Sensor Integrated Together with Memory Device,” naming Sang Hoon Park as inventor. A true and correct copy of the ’388 Patent is attached as Exhibit C.

11. On September 26, 2006, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,113,203 (the “’203 Patent”) entitled “Method and System for Single-Chip Camera,” naming Ben S. Wu, James Cape, and Shang-Hung Lin as inventors. A true and correct copy of the ’203 Patent is attached as Exhibit D.

12. Photonic Imaging is the sole and exclusive owner of all right, title and interest in the ’055 Patent, the ’187 Patent, the ’388 Patent, and the ’203 Patent, (collectively, the “Patents-in-Suit”), and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement action. Photonic Imaging also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

COUNT I
(Infringement of the '055 Patent)

13. Paragraphs 1 through 12 are incorporated by reference as if fully set forth herein.

14. Photonic Imaging has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '055 Patent.

15. Defendants have and continue to directly infringe the '055 Patent, including at least claim 1, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271 (including but not limited to 271(g)), by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '055 Patent. Such products include security cameras each of which incorporate one or more CMOS image sensors, such as Defendants' wireless security cameras, including but not limited to the LWF-series cameras, shown below:



16. Upon information and belief, Defendants' wireless security cameras contain CMOS image sensors supplied by Omnivision, such as the Omnivision OV9712.

17. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated using a method that includes providing a semiconductor layer of a first conductive type, *e.g.*, a P-epi layer.

18. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated using a method that includes forming an isolation layer dividing the semiconductor layer into a field region (*e.g.*, the area between each unit cell) and an active region (*e.g.*, the photodiode within each unit cell).

19. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a first impurity region of a second conductive type (*e.g.*, the N-Diffusion layer forming a pinned photodiode) within the semiconductor layer. Upon information and belief, this layer is formed using a first ion implantation mask and is structurally apart from the isolation layer.

20. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a second impurity region of the first conductive type (*e.g.*, the P-Pinning layer of the pinned photodiode) beneath the surface of the P-epi layer and on the first impurity region (the active region) using a second ion implantation mask, which opens a portion of the semiconductor

layer so that the width of the second impurity region (the P-pinning layer) is wider than that of the first impurity region (the N-Diffusion layer) and a portion of the second impurity region (the P-pinning layer) is in contact with the semiconductor layer (the P-epi layer).

21. Defendants have and continue to indirectly infringe one or more claims of the '055 Patent by knowingly and intentionally inducing others, including customers and end-users, to directly infringe to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, including products such as the LWF-series which contain CMOS image sensors.

22. Defendants, with knowledge that these products, or the use thereof, infringes the '055 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continue to knowingly and intentionally induce, direct infringement of the '055 Patent by supplying these products to end users for use in an infringing manner.

23. Defendants induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '055 Patent, but while remaining willfully blind to the infringement.

24. Photonic Imaging has suffered damages as a result of Defendants' direct and indirect infringement of the '055 Patent in an amount to be proved at trial.

COUNT II
(Infringement of the '187 Patent)

25. Paragraphs 1 through 12 are incorporated by reference as if fully set forth herein.

26. Photonic Imaging has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '187 Patent.

27. Defendants have and continues to directly infringe the '187 Patent, including at least claim 4, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '187 Patent. Such products include security cameras each of which incorporate one or more CMOS image sensors, such as Defendants' wireless security cameras, including but not limited to the LWF-series cameras, shown below:



28. Upon information and belief, Defendants' wireless security cameras contain CMOS image sensors supplied by Omnivision, such as the Omnivision OV9712.

29. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is a chip divided into first, second, and third sections which are formed in a single P-type layer.

30. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image

sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), , contains a unit pixel array formed in the first section, which detects light from an object.

31. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other COMS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains logic circuit (such as data processing logic which contains at least sample and hold logic) formed in the second section, which processes signals from the pixel array.

32. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other COMS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains memory such as SRAM formed in the third section, which stores outputs from the logic circuit.

33. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other COMS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains a first, second, and third sections that are isolated from each other by insulating layers.

34. Defendants have and continue to indirectly infringe one or more claims of the '187 Patent by knowingly and intentionally inducing others, including customers and end-users, to directly infringe to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, including products such as the LWF-series which contain CMOS image sensors.

35. Defendants, with knowledge that these products, or the use thereof, infringes the '187 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and

continue to knowingly and intentionally induce, direct infringement of the '187 Patent by supplying these products to end users for use in an infringing manner.

36. Defendants induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '187 Patent, but while remaining willfully blind to the infringement.

37. Photonic Imaging has suffered damages as a result of Defendants' direct and indirect infringement of the '187 Patent in an amount to be proved at trial.

COUNT III
(Infringement of the '388 Patent)

38. Paragraphs 1 through 12 are incorporated by reference as if fully set forth herein.

39. Photonic Imaging has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '388 Patent.

40. Defendants have and continue to directly infringe the '388 Patent, including at least claim 31, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271 (including but not limited to 271(g)), by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '388 Patent. Such products include security cameras each of which incorporate one or more CMOS image sensors, such as Defendants' wireless security cameras, including but not limited to the LWF-series cameras, shown below:



41. Upon information and belief, Defendants' wireless security cameras contain CMOS image sensors supplied by Omnivision, such as the Omnivision OV9712.

42. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a unit pixel, *e.g.*, at least one photodiode and associated circuitry.

43. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a logic cell, *e.g.*, a logic circuit (such as data processing logic which contains at least sample and hold logic).

44. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a first isolation region between the unit pixel and the logic cell.

45. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a memory cell, *e.g.*, SRAM memory blocks.

46. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), is fabricated by forming a second isolation region between the logic cell and the memory cell.

47. Defendants have and continue to indirectly infringe one or more claims of the '388 Patent by knowingly and intentionally inducing others, including customers and end-users, to directly infringe to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, including products such as the LWF-series which contain CMOS image sensors.

48. Defendants, with knowledge that these products, or the use thereof, infringes the '388 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '388 Patent by supplying these products to end users for use in an infringing manner.

49. Defendants induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '388 Patent, but while remaining willfully blind to the infringement.

50. Photonic Imaging has suffered damages as a result of Defendants' direct and indirect infringement of the '388 Patent in an amount to be proved at trial.

COUNT IV
(Infringement of the '203 Patent)

51. Paragraphs 1 through 12 are incorporated by reference as if fully set forth herein.

52. Photonic Imaging has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, or import any products that embody the inventions of the '203 Patent.

53. Defendants have and continue to directly infringe the '203 Patent, including at least claims 1 and 27, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '203 Patent. Such products include security cameras each of which incorporate one or more CMOS image sensors, such as Defendants' wireless security cameras, including but not limited to the LWF-series cameras, shown below:



54. Upon information and belief, Defendants' wireless security cameras contain CMOS image sensors supplied by Omnivision, such as the Omnivision OV9712.

55. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains a single-chip integrated circuit camera which includes at least an image sensor.

56. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains one or more optical elements, *e.g.*, a lens or microlens,

57. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains an image-processing element such as an image sensor processor, which receives raw image data and timing signals from the image sensor.

58. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains a data storage element such as memory which stores the image data produced by the image processing element.

59. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains a

communication interface element such as I/O pins for controlling input and output data and control signals for the camera.

60. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains an on-chip multiplexer and a register set.

61. Upon information and belief, the Omnivision OV9712 CMOS image sensor, and other similar CMOS image sensors found in Defendants' products (such as other CMOS image sensors containing Omnivision's PureCel or OmniPixel3-HS/GS technology), contains a test access element that comprises one or more IO pins, which verifies camera internal functionality by outputting a test pattern.

62. Upon information and belief, the I/O pins that form the test access element are either connected to the register set for controlling external functions (when not in test mode) or connected to internal data inputs and outputs for testing purposes (when in test mode).

63. Upon information and belief, the connection of the one or more I/O pins is controlled by the on-chip multiplexer.

64. Upon information and belief, each of the above-mentioned components is on a single-chip integrated circuit camera.

65. Defendants have and continue to indirectly infringe one or more claims of the '203 Patent by knowingly and intentionally inducing others, including customers and end-users, to directly infringe to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that

include infringing technology, including products such as the LWF-Series which contain CMOS image sensors.

66. Defendants, with knowledge that these products, or the use thereof, infringes the '203 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '203 Patent by supplying these products to end users for use in an infringing manner.

67. Defendants induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '203 Patent, but while remaining willfully blind to the infringement.

68. Photonic Imaging has suffered damages as a result of Defendants' direct and indirect infringement of the '203 Patent in an amount to be proved at trial.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a jury for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Photonic Imaging prays for relief against Defendants as follows:

- a. Entry of judgment declaring that Defendants have directly and/or indirectly infringed one or more claims of each of the Patents-in-Suit;
- b. An order awarding damages sufficient to compensate Photonic Imaging for Defendants' infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, together with interest and costs;
- c. Entry of judgment declaring that this case is exceptional and awarding Photonic Imaging its costs and reasonable attorney fees under 35 U.S.C. § 285; and

d. Such other and further relief as the Court deems just and proper.

Dated: April 2, 2018

BAYARD, P.A.

OF COUNSEL:

Alfred R. Fabricant
Peter Lambrianakos
Vincent J. Rubino, III
Joseph M. Mercadante
BROWN RUDNICK LLP
7 Times Square
New York, NY 10036
(212) 209-4800
afabricant@brownrudnick.com
plambrianakos@brownrudnick.com
vrubino@brownrudnick.com
jmercadante@brownrudnick.com

/s/ Stephen B. Brauerman
Stephen B. Brauerman (#4952)
Sara E. Bussiere (#5725)
600 N. King Street, Suite 400
P.O. Box 25130
Wilmington, Delaware 19801
(302) 655-5000
sbrauerman@bayardlaw.com
sbussiere@bayardlaw.com

*Attorneys for Plaintiff Photonic Imaging
Solutions, Inc.*