UNITED STATES DISTRICT COURT EASTERN DISTRICT OF MICHIGAN

NORTH PLATE SEMICONDUCTOR, LLC,

Case No. 2:19-cv-10439-DPH-DRG

Plaintiff,

Judge: Hon. Denise Page Hood

V.

OMNIVISION TECHNOLOGIES INC., TEXAS INSTRUMENTS INCORPORATED, SMART EYE INTERNATIONAL INC., SMK ELECTRONICS CORPORATION, U.S.A. Magistrate Judge: Hon. David R. Grand

Defendants.

JURY TRIAL DEMANDED

AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff North Plate Semiconductor, LLC ("NPS" or Plaintiff") hereby asserts a claim for patent infringement against Defendants OmniVision Technologies, Inc. ("OmniVision"), Texas Instruments Incorporated ("Texas Instruments"), Smart Eye International Inc. ("Smart Eye"), SMK Electronics Corporation, U.S.A. ("SMK")(collectively referred to as "Defendants"), and in support thereof allege as follows:

NATURE OF CASE

1. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §1 et seq., specifically including 35 U.S.C. §271.

2. As set forth below, Plaintiff holds the rights in U.S. Patent Nos. 6,211,509 ("the '509 patent"); 6,150,676 ("the '676 patent); 6,521,926 ("the '926 patent"); 7,928,483 ("the '483 patent"); 8,854,521 ("the '521 patent"); RE46123 ("the '123 patent"); 8,178,913 ("the '913 patent") (cumulatively "Patents-in-Suit"). The United States patent laws grant the holder of a patent the right to exclude infringers from making, using, selling or importing the invention claimed in a patent, to recover damages for the infringer's violations of these rights, and to recover treble damages where the infringer willfully infringed the patent. Under 35 U.S.C. § 282(a), the Patents-in-Suit are entitled to a presumption of validity. Plaintiff is suing Defendants for infringing its patents, and doing so willfully. Plaintiff seeks to recover damages from Defendants, including treble damages for willful infringement.

THE PARTIES

3. North Plate Semiconductor, LLC is a company, organized and existing under the laws of the Delaware, with a principal place of business at 39555 Orchard Hill Place, Suite 600, Novi, Michigan, 48375.

4. Upon information and belief, Defendant OmniVision Technologies, Inc., is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 4275 Burton Drive, Santa Clara,

California 95054, and a regular and established place of business at 27280 Haggerty Road, Suite C15, Farmington Hills, Michigan, 48331.

5. Upon information and belief, Defendant Texas Instruments Incorporated is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 12500 TI Boulevard, Dallas, Texas 75243, and a regular and established place of business at 29777 Telegraph Road, Suite 2500, Southfield, Michigan 48034.

6. Upon information and belief, Defendant Smart Eye International Inc. is a corporation organized and existing under the laws of the State of Delaware with its principal place of business at 455 E. Eisenhower Parkway, Suite 300, Ann Arbor, Michigan 48108.

7. Upon information and belief, Defendant SMK Electronics Corporation, U.S.A., is a corporation organized and existing under the laws of the State of California with a principal place of at 1055 Tierra del Rey, Chula Vista, California 91910, and a regular and established place of business at 39209 Six Mile Road, Suite #206, Livonia, Michigan 48152.

JURISDICTION

8. This is an action for patent infringement arising under the patent laws of the United States of America, more specifically under 35 U.S.C. § 1, *et seq.*,

including 35 U.S.C. §271. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

This Court has personal jurisdiction over Defendants because each 9. Defendant, among other things, conducts business in, and avail themselves to the laws of, the State of Michigan. Upon information and belief, as set forth above in paragraphs 4 through 7, each Defendant has a regular and established place of business within this judicial district. Each Defendant has purposefully and regularly availed themselves of the privileges of conducting business in the State of Michigan and in the Eastern District of Michigan and expected or reasonably should have expected its acts to have consequence in the State of Michigan and within this judicial District. Plaintiff's cause of action arises directly from each Defendants' business contacts and other activities in the State of Michigan and in this District. Each Defendant have committed acts of patent infringement in this District, and have harmed and continue to harm Plaintiff in this District, by, among other things, using, selling, offering for sale, and/or importing the Accused OmniVision Products (as defined below) in this District.

VENUE

10. Venue properly lies within this judicial district and division, pursuant to 28 U.S.C. §§ 1391 and 1400(b) because, as set forth above in paragraphs 4

through 7, each Defendant has regular and established place of business within the district and have committed acts of infringement within the district.

11. Upon information and belief, each Defendant separately maintains and operates places of business within this district. Defendant OmniVision's acts of infringement within the district include, but are not limited to, selling and offering for sale the Accused OmniVision Products (as defined herein) within the district to its distributor, Arrow Electronics located in Plymouth, MI. Each Defendant's acts of infringement within this district include, but are not limited to, selling and offering for sale products that incorporate the Accused OmniVision Products within this judicial district. Likewise, each Defendant resides in this District for the purposes of venue, insofar as they are subject to the personal jurisdiction in this District, solicit business in this District, conduct other business in this District, and have committed acts of infringement in this District.

THE PATENTS-IN-SUIT

U.S. Patent No. 6,211,509

12. The '509 patent, entitled "Semiconductor Device And Method For Manufacturing The Same," was duly and lawfully issued by the United States Patent and Trademark Office on May 8, 2012. The '509 patent issued from U.S. Patent Application No. 12/714,586 filed on March 1, 2010 by inventors Hideki Okumura, Takayoshi Nogami, Hiroto Misawa. A true and correct copy of the '509 patent is attached hereto as Ex. A.

13. The '509 patent is valid and enforceable.

14. Plaintiff is the assignee and the owner of all right, title and interest in and to the '509 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. 6,150,676

15. The '676 patent, entitled "MOS Type Image Sensor," was duly and lawfully issued by the United States Patent and Trademark Office on November 21, 2000. The '676 patent issued from U.S. Patent Application No. 09/266,007 filed on Mach 11, 1999 by inventor Michio Sasaki. A true and correct copy of the '676 Patent is attached hereto as Ex. B.

16. The '676 Patent is valid and enforceable.

17. Plaintiff is the assignee and the owner of all right, title and interest in and to the '676 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. 6,521,926

18. The '926 patent, entitled "MOS Type Image Sensor," was duly and lawfully issued by the United States Patent and Trademark Office on February 18, 2003. The '926 patent issued from U.S. Patent Application No. 09/695,989 filed on

October 26, 2000 by inventor Michio Sasaki. A true and correct copy of the '926 Patent is attached hereto as Ex. C.

19. The '926 Patent is valid and enforceable.

20. Plaintiff is the assignee and the owner of all right, title and interest in and to the '926 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. 7,928,483

21. The '483 patent, entitled "Semiconductor Device and Method for Manufacturing the Same," was duly and lawfully issued by the United States Patent and Trademark Office on April 19, 2011. The '483 patent issued from U.S. Patent Application No. 12/388,667 filed on February 19, 2009 by inventors Atushi Murakoshi and Katsunori Yahashi. A true and correct copy of the '483 Patent is attached hereto as Ex. D.

22. The '483 Patent is valid and enforceable.

23. Plaintiff is the assignee and the owner of all right, title and interest in and to the '483 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. 8,854,521

24. The '521 patent, entitled "Solid-State Image Sensing Device and Control Method of Solid-State Image Sensing Device," was duly and lawfully

issued by the United States Patent and Trademark Office on October 7, 2014. The '521 patent issued from U.S. Patent Application No. 13/603,728 filed on September 5, 2012 by inventors Tomonori Yamashita and Tomohiro Matsuura. A true and correct copy of the '521 Patent is attached hereto as Ex. E.

25. The '521 Patent is valid and enforceable.

26. Plaintiff is the assignee and the owner of all right, title and interest in and to the '521 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. RE46123

27. The '123 patent, entitled "Solid-State Image Sensor and Method of Manufacturing the Same," was duly and lawfully issued by the United States Patent and Trademark Office on August 23, 2016. The '123 patent issued from U.S. Patent Application No. 14/595,464 filed on January 13, 2015 by inventors Mariko Saito, Ikuko Inoue, and Takeshi Yoshida. A true and correct copy of the '123 Patent is attached hereto as Ex. F.

28. The '123 Patent is valid and enforceable.

29. Plaintiff is the assignee and the owner of all right, title and interest in and to the '123 patent, and has the right to sue and recover damages for infringement thereof.

U.S. Patent No. 8,178,913

30. The '913 patent, entitled "Semiconductor Device And Method For Manufacturing Same," was duly and lawfully issued by the United States Patent and Trademark Office on May 15, 2012. The '913 patent issued from U.S. Patent Application No. 12/926,771 filed on December 8, 2010 by inventors Atushi Murakoshi and Katsunori Yahashi. A true and correct copy of the '913 Patent is attached hereto as Ex. G.

31. The '913 Patent is valid and enforceable.

32. Plaintiff is the assignee and the owner of all right, title and interest in and to the '913 patent, and has the right to sue and recover damages for infringement thereof.

GENERAL ALLEGATIONS

33. The Accused OmniVision Products include at least Defendant OmniVision's CMOS image sensor products, including but not limited to the OV8850 and OV13850 devices (collectively defined as the "Accused OmniVision Products"). As stated on OmniVision's website, these image sensors are used in the automotive, medical imaging, mobile device, surveillance, AR/VR/Drones/Robotics, and computing industries. These products are sold and/or offered for sale throughout the United States, including Michigan.

34. OmniVision designs, develops, engineers and manufactures the Accused OmniVision Products, and directly, and through its affiliates, makes, uses,

imports, sells and offers to sell the same throughout the United States, including in this district in Michigan. OmniVision also supports and encourages others to import, use, offer for sale and sell throughout the United States, including in this district in Michigan, products incorporating the Accused OmniVision Products.

35. The Accused OmniVision Products have and continue to be used, sold and/or offered for sale within the United States, including in this district, thus constituting direct infringement under 35 U.S.C. § 271(a) by entities other than Defendant OmniVision (hereinafter, the "Direct Infringers"). Motorola has been and continues to be a customer of OmniVision.¹ Motorola sells and has sold the Moto X within the United States, which incorporates OmniVision's OV10820 image sensor. (Ex. P). Motorola sells and has sold the Moto Z Droid and the Moto Z Force Droid within the United States, which each incorporate the OmniVision OV5693 image sensor. (Ex. Q). Motorola sells and has sold the Moto Z within the United States, which incorporates OmniVision's OV16860 image sensor. (Ex. R). Motorola sells and has sold the Moto G4 Plus within the United States, which incorporates OmniVision's OV16860 and OV5693 image sensors. (Ex. S). Lenovo has been and continues to be a customer of OmniVision. Lenovo sells and has sold the Lenovo K3 Note and the Lenovo K8 Plus within the

¹ Godo Kaisha IP Bridge 1 v. OmniVision Technologies, Inc., Civil Action No. 16-290 (D. Del.) (Dkt. 168 ¶4, Feb. 5, 2019, Decl. of Michelle Milunovic).

United States, which each incorporate OmniVision's OV13850 image sensor. (Ex. T). Lenovo sells and has sold the Lenovo K8 Note, which incorporates OmniVision's OV13855 image sensor. (Ex. U). Lenovo sells the Lenovo Z5 within the United States, which incorporates OmniVision's OV16855 image sensor. (Ex. V). Lenovo sells and has sold the MotoG Plus within the United States, which incorporates OmniVision's image sensors. (Ex. W). Microsoft sells and has sold Surface Pro 2017 within the United States, which incorporates OmniVision's OV5693 and OV7251 image sensors. (Ex. X). Microsoft sells and has sold Surface Pro 4 within the United States, which incorporates OmniVision's OV5693 and OV8865 image sensors. (Ex. Y). Apple sells and has sold versions of iPad within the United States, which includes OmniVision's OV5650, and iPod Nano and iPad 2 within the United States, which incorporates OmniVision's OV297. (Ex. Z). Apple sells and has sold iPhone 5S within the United States, which incorporates OmniVision's OV2724 image sensor. (Ex. AA). Apple sells and has sold iPad 3 and iPhone 4S within the United States, which incorporates OmniVision's OV5650 image sensor. (Ex. BB). Samsung sells and has sold the Galaxy S3 and Galaxy S2 within the United States, which incorporates OmniVision's OV5650 image sensor. (Id.). HTC sells and has sold the HTC One X within the United States, which incorporates OmniVision's OV5650 image sensor. (Id.).Smart Eye sells and has sold a sensing algorithm product to

automotive OEMs within the United States, which incorporates OmniVision's OV2311 image sensor. (Ex. CC). SMK sells and has sold a camera module for Tesla automobiles within the United States, which incorporates OmniVision's OV10635 image sensor. (Ex. CC). Texas Instruments sells and has sold Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x within the United States, which incorporates OmniVision's 10635 image sensor. (Ex. DD at 9). For the reasons alleged elsewhere herein, including within the attached preliminary infringement claim charts (Exs. I through O) each of the foregoing constitute specific examples of direct infringement of the Patents-in-Suit within the United States by the Direct Infringers.

36. Actual sales, offers for sales and uses by third parties, including, without limitation, the Direct Infringers, have and continue to occur within the United States. By way of example, Arrow Electronics has and continues to use, sell and offer for sale the Accused OmniVision Products at specific prices within the United States. (Ex. BBB). Arrow's offer for sale of the Accused OmniVision Products indicates that, when sold, the Accused OmniVision Products "Ships from: United States of America." (*Id.*). Similarly, Digi-Key has and continues to use, sell and offer for sale the Accused OmniVision Products at specific prices within the United States. (Ex. CCC). OmniVision's website expressly identifies Arrow

and Digi-Key as distribution channels for the Accused OmniVision Products within regions including the United States. (Ex. AAA).

Thus, Defendant OmniVision has and continues to intentionally 37. induce others, including the Direct Infringers, to directly infringe in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents. By way of example only, Defendant OmniVision sells and delivers the infringing Accused OmniVision Products to U.S. distributors including Arrow Electronics located in Plymouth, MI, Mouser Electronics located in Mansfield, TX, Digi-Key Electronics located in Thief River Falls. MN and others, and thereafter induces these distributors to sell and offer for sale the infringing products to customers in the United States thereby directly infringing each of the Patents-in-Suit. Arrow Electronics, Mouser Electronics and Digi-Key maintain websites (arrow.com, mouser.com and www.digikey.com) available to U.S.-based customers that, as a result of Defendant OmniVision's inducement, stock, sell, and offer for sale the Accused OmniVision Products. Defendant OmniVision further induces third parties to incorporate the Accused OmniVision Products as components into additional products for various applications to be used in the United States, by, for example, providing datasheets,

application notes, product briefs, and other collateral on their Internet website (http://www.ovt.com) available to U.S. customers.

38. Defendant OmniVision has and continues to specifically intend the Direct Infringers to infringe the Patents-in-Suit. Defendant OmniVision has and continues to engage in affirmative acts evidencing this specific intent. For instance, Defendant OmniVision has and continues to specifically intend the Direct Infringers to infringe the Patents-in-Suit by affirmatively advertising, promoting and touting benefits, features and functions of the Accused OmniVision Products that mirror the benefits, functions and features of the inventions claimed in the Patents-in-Suit.

39. The '509 patent is directed to a solid-state image sensor. In the particular, the '509 patent claims, according to claim 1, inter alia, a solid-state image sensor comprising a plurality of pixels, a scanning circuit and "element isolation regions configured to isolate said pixel units from each other." In a preferred embodiment, the element isolation regions are formed of a field oxide film, below which are p-type diffusion layers that have impurity concentrations higher than the substrate. ('509 patent col. 6:29-50). As a result, "charges generated in a deep portion of the semiconductor substrate [] by long-wavelength light entering a deep layer of the substrate can be confined to one pixel unit to prevent leakage of the charges into the adjacent pixel units." (Id. col. 6:59-63).

This reduces color mixture and blooming. (Id. col. 6:63-66). Defendant OmniVision touts that the Accused OmniVision Products with Nyxel® technology achieves "deep trench isolation" that "creates a barrier between the pixels to eliminate crosstalk and improve modular transfer function."(Ex. PP). Defendant OmniVision touts that the Accused OmniVision Products with Purecel® technology offers "blooming suppression."² Defendant OmniVision touts that Accused OmniVision Products with Purecel®Plus technology "reduces crosstalk by creating isolation walls between pixels inside silicon for better chief ray angle (CRA) tolerance. PureCel®Plus gen-2 introduces improve DTI [deep trench isolation] for even better pixel isolation and low-light performance." (Ex. QQ). Defendant OmniVision also claims that DTI "prevents light from crossing over to neighboring pixels, which significantly reduces crosstalk."³ Defendant OmniVision touts that Accused OmniVision Products with OmniBSI Technology have "reduced pixel crosstalk, high quantum efficiency, improved low-light sensitivity." (Ex. RR).

40. The '676 patent is directed to MOS type image sensor. In the particular, the '676 patent claims, according to claim 17, inter alia, a MOS type image sensor comprising a photodiode, a read transistor and an amplification $\frac{1}{2}$ https://www.ovt.com/purecel-pixel-tech/purecel at 0:48 (last accessed 4/11/19)

³ <u>https://www.ovt.com/purecel-pixel-tech/purecel-plus</u> at 1:17 (last accessed 4/11/19)

transistor with unique structures as recited in the claims. In a preferred embodiment, the '676 patent discloses that the technical advantages of the disclosed MOS type image sensor within the '676 patent include preventing "white" pixels, otherwise known as black or defect pixels. Defendant OmniVision touts that the "features" of example Accused OmniVision Products include support for "dynamic DPC cancellation,"(Ex. SS) where DPC stands for "defect pixel correction."(Ex. TT). Numerous Accused OmniVision Products are touted for dynamic DPC cancellation. The '676 patent also discloses that another technical advantage of the disclosed MOS type image sensor includes improving sensitivity to light and securing spectral sensitivity in a long wavelength spectrum. ('676 patent col. 10:1-2). Defendant OmniVision touts that the Accused OmniVision Products with Purecel® technology offers "higher sensitivity."⁴ Defendant OmniVision touts that Accused OmniVision Products with OmniBSI (Ex. RR) Technology have "reduced pixel crosstalk, high quantum efficiency, improved The '676 patent also discloses that another technical low-light sensitivity." advantage of the disclosed MOS type image sensor includes lowering the signal read voltage. The '676 patent also discloses that another technical advantage of the disclosed MOS type image sensor includes Defendant OmniVision also touts

⁴ <u>https://www.ovt.com/purecel-pixel-tech/purecel</u> at 0:46 (last accessed 4/11/19)

that the Accused OmniVision Products with Purecel® technology offers "lower power consumption,"⁵ and "best-in-class power efficiency." (Ex. UU).

The '483 patent is directed to semiconductor device. In the particular, 41. the '483 patent claims, according to claim 1, inter alia, a semiconductor device comprising a buried dialetric film and an element isolation film with a unique structure that reduces the thickness of the overall device. ('483 patent col. 6:49-Defendant OmniVision touts that Accused OmniVision Products with 7:29). OmniBSI (Ex. RR). Technology have "enables thinner camera modules." Defendant OmniVision touts other Accused OmniVision Products "designed for slim notebooks, tablets, handsets, and other devices that require a thin bezel."(Ex. VV). Specifically, Defendant OmniVision touts, for example, "[t]o fit ultra-thin bezel devices, the OV9734 comes in a compact package that can meet 2.5 mm zheight and is 47 percent smaller in y-dimension compared to the previous generation 720p sensor." (Ex. VV). Defendant OmniVision touts other Accused OmniVision Products as enabling "ultra-thin camera modules." (Ex. WW).

42. The '913 patent is directed to a semiconductor device. In the particular, the '913 patent claims, according to claim 1, inter alia, a semiconductor device comprising a buried dialetric film and an element isolation film, where "a

⁵ <u>https://www.ovt.com/purecel-pixel-tech/purecel</u> at 0:30; 0:47; 1:39 (last accessed 4/11/19)

lower surface of the buried dialectric film being at a level higher than a lower surface of the first-conductive-type region." ('913 patent col. 18:36-38). In a preferred embodiment, the '913 patent discloses that pixel sensitivity is increased when the lower surface of the buried dialectric is not lower than the first-conductivity photodiode region. (Id. col. 14:26-31). Otherwise, the dialectric "encroaches into the portion of the photodiode 43 having the maximum impurity concentration and significantly decreases the amount of impurities available for photoelectric conversion." (Id.). Defendant OmniVision touts that Accused OmniVision Products with Purecel®⁶ and Purecel®Plus technolog⁷ include "higher sensitivity." Defendant OmniVision touts that Accused OmniVision Products with OmniBSI (Ex. RR) Technology have "reduced pixel crosstalk, high quantum efficiency, improved low-light sensitivity."

43. The '123 patent is directed to a solid-state image sensor. In particular, the claims of the '123 patent are direct to a solid-state image sensor comprising, inter alia, specific structure for interconnects and dummy layers formed in certain surfaces of the device. ('123 patent col. 11:15-58). This structure, in a preferred embodiment, reduces adhesion defects between layers of the claimed device. (Id. col. 6:30-40; col. 10:42-63). Defendant OmniVision touts that the Accused ⁶ https://www.ovt.com/purecel-pixel-tech/purecel at 0:46 (last accessed 4/11/19)

⁷ <u>https://www.ovt.com/purecel-pixel-tech/purecel-plus</u> at 0:44 (last accessed 4/11/19)

OmniVision Products, have features that "reduc[e] artifacts and increas[e] system reliability," (Ex. DDD) and meet all "market requirements in terms of performance, quality and reliability." (Ex. EEE)

44. The '926 patent is directed to a solid-state image sensor. In particular, the '926 patent claims, according to claim 8, inter alia, a MOS type image sensor having an image area containing an array of pixels, comprising a photodiode for generating charges, a read transistor having a first gate electrode and an amplification transistor having a second gate electrode, with a gate length defined by the second gate electrode shorter than the gate length defined by the first gate electrode of the read transistor. In one embodiment, "to suppress a punch-through current flowing between the source and drain regions of the read MOSFET Q2, the first embodiment makes the gate length 11 of the control electrode 23 of the read MOSFET Q2 larger than the gate length 10 of any one of the other MOSFETs, as shown in FIGS. 4 and 5." ('926 patent col. 10:21-26). As a result, "[t]his secures good pixel characteristics." (Id. col. 10:30). The '926 patent discloses that such embodiment "provides the following technical advantages when employing fine MOSFETs for the MOS type image sensor: (1) preventing 'white pixels' due to junction leakage currents; (2) improving sensitivity to light and securing spectral sensitivity in a long wavelength spectrum; and (3) lowering a signal read voltage." (Id. col. 10:7-14). Defendant OmniVision touts that the "features" of the Accused OmniVision Products include "dramatically improved pixel performance" and "best-in-class low- and high-light performance." (Ex. UU). The '926 patent also discloses that another technical advantage of the disclosed MOS type image sensor includes improving sensitivity to light and securing spectral sensitivity in a long wavelength spectrum. ('926 patent col. 3:36-39). Defendant OmniVision touts that the Accused OmniVision Products with Purecel® technology offer "higher sensitivity" and "better low-light sensitivity."⁸ The '926 patent also discloses that another technical advantage of the disclosed MOS type image sensor includes lowering the signal read voltage. (*Id.* col. 10:12-14). Defendant OmniVision also touts that the Accused OmniVision Products with Purecel® technology offer "lower power consumption"⁹ and "best-in-class power efficiency." (Ex. UU).

45. The '521 patent is directed to a solid-state image sensor. In particular, the '521 patent claims, according to claim 1, inter alia, a solid-state image sensing device comprising a pixel including a photoelectric conversion element (e.g., photodiode), a signal detection unit, field effect transistors and a control signal selection circuit to select a control signal applied to the control signal line. The control signal selection circuit sets a potential of the control signal line applied to the drain of the reset transistor at three levels that are of different magnitudes from

⁸ <u>https://www.ovt.com/purecel-pixel-tech/purecel</u> at 0:46 (last accessed 4/11/19)

⁹ <u>https://www.ovt.com/purecel-pixel-tech/purecel</u> at 0:30; 0:47; 1:39 (last accessed 4/11/19)

each other. ('521 patent, Abstract; col. 9:1-7). The '521 patent discloses that the application period of the high potential in the driving sequence of the image sensor is reduced "since the application period of the high potential is partially replaced by that of the medium potential lower than the high potential." (Id. col. 9:12-16). This results in suppression of degradations of elements. (Id. col. 9:16-18) Also, since the medium potential (higher than the low potential) is applied to the drain of the reset transistor of each pixel, "a potential difference between neighboring pixels can be reduced compared to a case in which the low potential is applied to the reset transistor 62 of the pixel 6." (Id. col. 9:19-26) Therefore, "a charge leakage between neighboring pixels . . . can be suppressed," resulting in improved reliability and image quality of the sensor. (Id. col. 9:27-29). Defendant OmniVision touts that the Accused OmniVision Products with OmniBSI-2 technology offer "advanced image quality" and "an increase in low-light performance, improvements in quantum efficiency, and full-well capacity - and increase die per wafer." (Ex. XX). Defendant Omnivision also touts reliability of its sensors which "aim[s] to drive down the cost, power, and space requirements of implementing vision-based driver monitoring systems without sacrificing image quality or product reliability." (Ex. YY). Defendant OmniVision touts that Accused OmniVision Products with OmniBSI (Ex. RR). Technology have "reduced pixel crosstalk, high quantum efficiency, improved low-light sensitivity."

As discussed in connection with the '509 patent, Defendant OmniVision also claims that DTI "prevents light from crossing over to neighboring pixels, which significantly reduces crosstalk."¹⁰

Defendant OmniVision has and continues to specifically intend the 46. Direct Infringers to infringe the Patents-in-Suit, and Defendant OmniVision has and continues to engage in affirmative acts evidencing this specific intent. For example, Defendant OmniVision affirmatively designs the Accused OmniVision Products to infringe the Patents-in-Suit by pursuing design wins. Defendant OmiVision has stated, "Our success has been, and will continue to be, dependent upon manufacturers and their customers designing our image-sensor products into their products. To achieve design wins, which are decisions by manufacturers and their customers to design our products into their systems, we must define and deliver cost effective and innovative image-sensor solutions on a timely basis that satisfy the manufacturers' and their customers' requirements and specifications." (OmniVision 10K for fiscal year ended April 2015 at 28). Thus, Defendant OmniVision affirmatively designs its image sensors to comply with their manufacturers and their customers' requirements and specifications, and therefore affirmatively acts to specifically intend its customers, end customers and/or design-

¹⁰ <u>https://www.ovt.com/purecel-pixel-tech/purecel-plus</u> at 1:17 (last accessed 4/11/19)

win targets to intentionally infringe the Patents-in-Suit by knowingly and intentionally incorporating the Accused OmniVision Products into their products sold and/or offered for sale within the United States.

47. Defendant OmniVision has and continues to specifically intend the Direct Infringers to infringe the Patents-in-Suit, and Defendant OmniVision has and continues to engage in affirmative acts evidencing this specific intent. For example, Defendant OmniVision provides customer support to its customers and/or other companies incorporating the Accused OmniVision Products. As an example, Defendant OmniVision employs, or has employed, a customer support personnel named Don Boe, who resides in Chicago and appears to provide customer support for Motorola. (Ex. EE). Motorola is one of OmniVision's customers. (Ex. OO ¶4). Motorola has a location in Chicago. Mr. Boe previously worked for Motorola. (Ex. EE). Mr. Boe's "identity, location, and assignment to Motorola . . . disclose how OmniVision locates customer support representatives in relation to its customers as part of its marketing and support strategies." (See Godo Kaisha IP Bridge 1 v. OmniVision Technologies, Inc., Civil Action No. 16-290 (D. Del.) (Dkt 166 at 2). According, Defendant OmniVision affirmatively staffs customer support personnel with former employees of customers or end customers. Defendant OmniVision thus offers customer support for its customers and/or end customers incorporating the Accused OmniVision Products, and therefore

affirmatively acts to specifically intend its customers, end customers or design-win targets to intentionally infringe the Patents-in-Suit by knowingly and intentionally inducing them to incorporate the Accused OmniVision Products into their products that are sold and/or offered for sale within the United States.

48. Defendant OmniVision is knowledgeable of the end customers for the Accused OmniVision Products in the United States, and Defendant OmniVision is knowledgeable of the end customer products sold and/or offered for sale within the United States that incorporate the Accused OmniVision Products. For example, Defendant OmniVision has admitted being knowledgeable that its image sensors were previously incorporated into certain Apple iPhone products. (See In re OmniVision Technologies, Inc. Securities Litigation, Case No. 5:11-5235-RMW, Dkt. 147, ¶50). Defendant Omnivision has touted that it is "No. 2" in automotive in terms of CIS (contact image sensor) shipments. OmniVision has the thirdlargest market share of the automotive image sensor market. Defendant is therefore knowledgeable of other end customers within the United States for products sold and/or offered for sale that incorporate the Accused OmniVision Products.

49. In addition, Defendant OmniVision actively solicits technical support inquiries from "OEMs" and "End Users" in regions including "North American -Western," "North American - Central," and "USA/Canada – Eastern," as well as

specifically from companies within the "United States" (under Country, which is a required input). (Ex. ZZ). Defendant OmniVision has numerous distribution channels within North America, including distributors located in Colorado (Arrow) and Minnesota (Digi-key) to support its customers "around the globe." (Ex. AAA). Defendant OmniVision also affirmatively pursues "design wins" from end customers located within the United States so that end customers will incorporate the Accused OmniVision Products into their products. (OmniVision 10K for fiscal year ending April 2015 at 28). These "design wins" provide Defendant OmniVision with knowledge of end customers within the United States for products sold and/or offered for sale that incorporate the Accused OmniVision Products.

50. In addition, Defendant OmniVision employs personnel in the United States to engage and maintain "key relationships" with customers and end customers whose products are sold and offered for sale in the United States and incorporate the Accused OmniVision Products. These customers and end customers include Valeo, Kyocera, Panasonic, Sharp, Bosch, Continental, Motorola, Blackberry, HP and Dell. (Ex. FF). Defendant OmniVision is also knowledgeable the Accused OmniVision Products are incorporated into end user products sold by Apple, Google, Amazon, Intel, Microsoft (Ex. OO); Apple, Huawei, Sony, Xiaomi (Ex. GG); Apple, LG, Xiaomi, Dahua (Ex. HH).

Defendant OmniVision employs account managers that are specifically responsible for "sales program management and business development" for "North American regions" (Ex. II). Defendant OmniVision employs personnel to cooperate with "[nine] worldwide company sales regions to identify customer requirements, competitor strategies and market trends, defining next-generation product to meet market demand." (Ex. JJ).

51. Defendant OmniVision specifically tracks sales of end user products sold and/or offered for sale within the United States of products incorporating the Accused OmniVision Products into the Unite States. Defendant OmniVision employs personnel to specifically "[m]anage the US Distribution Sales into US . . . market[] for various applications such as Medical, Security/IOT, Automotive" (Ex. KK). Defendant OmniVision employs personnel to "[g]enerate OmniVision awareness within distribution to increase sales and product knowledge; by providing sales and marketing tools and updated product information on a regular basis to distribution sales force" (*Id.*). This includes "[t]rack[ing] US distribution point of sale sell [sic] through on a monthly basis to monitor growth" (*Id.*).

52. Defendant OmniVision affirmatively engages with end customers in the United States and in this district. In the automotive segment, as an example, Defendant OmniVision employs personnel whose job responsibilities include affirmatively engaging with end customers in the United States so that those end

customers will incorporate the Accused OmniVision Products into their products for sale and/or offer for sale within the United States. Those employees have job responsibilities including: "enabling automotive camera sensor and ISP solutions for the North American region" (Ex. LL); business development, marketing, sales and other tasks "in the field of automotive and autonomous mobility" (Ex. MM); "identify[ing] growth opportunities in the Automotive camera space, then develop and grow those opportunities" (Ex. NN); ensuring that OmniVision capitalizes on "[a]dvanced driver assistance systems involving digital camera technology," which is "one of the largest growth opportunities in the automotive sector" (Id.); "working with key Automotive customers in the Detroit Metro Area," in a "highly visible position" that includes management of "multiple accounts within the Detroit region" (Job posting, OmniVision Technologies, Inc., Senior-Sales Manager-Detroit, Farmington Hills, MI); "driv[ing] growth for automotive segment in North America" (Ex. Job posting, OmniVision Technologies, Inc., Sr. Automotive Marketing Manager, Farmington Hills, MI). In the automotive segment alone, Defendant OmniVision therefore tracks the end customers of the Accused OmniVision Products.

53. Defendant OmniVision's 10K for fiscal year ended April 2015 reported that annual sales in the United States accounted for only 0.9% of total revenues (or roughly \$11.8 million dollars). (pp. 67, 124). Yet, Defendant

OmniVision stated, "[t]he revenues we report by geography are based on the country or region in which our customers issue their purchase orders to us . . . Because of the preponderance of Asia-Pacific manufacturers and the fact that virtually all products incorporating our image-sensor products are sold globally, we believe that the geographic distribution of our sales does not accurately reflect the geographic distribution of sales into end-user markets of products which incorporate our image sensors." (p. 67). Defendant OmniVision employs numerous personnel to manage, analyze and sell to end customers in the United States and in this district. Thus, Defendant OmniVision is aware and knowledgeable of the extent that the Accused OmniVision Products are incorporated into end user products that are distributed in the United States.

54. The extent and nature of OmniVision's customer support for its customers and end customers is uniquely within Defendant OmniVision's knowledge. Defendant OmniVision has been compelled in prior cases to produce discovery of its customers, end customers and customer support for companies incorporating the Accused OmniVision Products sold and/or offered for sale in the United States. (*Godo Kaisha IP Bridge 1 v.. Omnivision Technologies, Inc.*, Civil Action No. 16-290 (D. Del.)(Dkt. 160-1 at 18:25-19:3; 25:23-26:7.)

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 6,211,509

55. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

56. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1, 2, 3, 17, 18, 21 and 22 of the '509 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

57. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '509 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

58. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1, 2, 3, 17, 18, 21, and 22 of the '509 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or

selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

59. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1, 2, 3, 17, 18, 21, and 22 of the '509 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

60. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1, 2, 3, 17, 18, 21, and 22 of the '509 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

61. As a non-limiting example of each Defendant's infringement of the '509 Patent, set forth in Ex. I, is a preliminary claim chart showing infringement of exemplary claims 1, 2, 3, 17, 18, 21 and 22 of the '509 Patent by Defendant OmniVision's OV8850 and OV13850 CMOS image sensor products.

62. Upon information and belief, each Defendant's infringement of the '509 Patent by the OV8850 and OV1350 products is representative of and proof of each Defendant infringement of the '509 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '509 Patent.

63. Defendant OmniVision has been on notice of the '509 Patent and Defendant OmniVision's infringement of the '509 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the '509 patent.

64. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '509 Patent and each defendant's respective infringement of the '509 Patent, since, at least, the date of this Complaint.

65. Upon information and belief, Defendant OmniVision's continued infringement of the '509 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant Omnivision's prior knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '509 Patent.

66. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any devices encompassed by the claims in the '509 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

67. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '509 Patent is willful. Each Defendants willful infringement of the '509 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

68. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 6,150,676

69. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

70. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least

claims 17, 19 and 20 of the '676 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

71. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '676 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

72. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 17, 19 and 20 of the '676 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

73. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 17, 19 and 20 of the '676 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

74. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 17, 19 and 20 of the '676 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

75. As a non-limiting example of each Defendant's infringement of the '676 Patent, set forth in Ex. J, is a preliminary claim chart showing infringement of exemplary claims 17, 19 and 20 of the '676 Patent by Defendant OmniVision's OV8805 and OV13850 CMOS image sensor products.

76. Upon information and belief, each Defendant's infringement of the '676 Patent by the OV8805 and OV1350 products is representative of and proof of each Defendant's infringement of the '676 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '676 Patent.

77. Defendant OmniVision has been on notice of the '676 Patent and Defendant OmniVision's infringement of the '676 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the '676 patent, and due to citation to the '676 patent by OmniVision's U.S. Patent No. 6,486,521.

78. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '676 Patent and each defendant's respective infringement of the '676 Patent, since, at least, the date of this Complaint.

79. Upon information and belief, Defendant OmniVision's continued infringement of the '676 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its

infringement. In particular, despite Defendant OmniVision's prior knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '676 Patent.

80. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any devices encompassed by the claims in the '676 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

81. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '676 Patent is willful. Each Defendants willful infringement of the '676 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

82. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 6,521,926

83. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

84. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 8 and 14 of the '926 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed

in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

85. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '926 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

86. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 8 and 14 of the '926 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

87. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 8 and 14 of the '926 Patent at least during the period prior to the expiration of the

patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

88. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 8 and 14 of the '926 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

89. As a non-limiting example of each Defendant's infringement of the '926 Patent, set forth in Ex. K, is a preliminary claim chart showing infringement of exemplary claims 8 and 14 of the '926 Patent by Defendant OmniVision's OV13850 CMOS image sensor product.

90. Upon information and belief, each Defendant's infringement of the '926 Patent by the OV1350 product is representative of and proof of each Defendant's infringement of the '926 Patent by all of the Accused OmniVision

Products as well as products incorporating the Accused OmniVision Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '926 Patent.

91. Defendant OmniVision has been on notice of the '926 Patent and Defendant OmniVision's infringement of the '926 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the '926 patent.

92. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '926 Patent and each defendant's respective infringement of the '926 Patent, since, at least, the date of this Complaint.

93. Upon information and belief, Defendant OmniVision's continued infringement of the '926 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant OmniVision's prior knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '926 Patent.

94. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any semiconductor devices encompassed by the claims

in the '926 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

95. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '926 Patent is willful. Each Defendants willful infringement of the '926 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

96. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. 7,928,483

97. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

98. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1 and 2 of the '483 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

99. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '483 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

100. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1 and 2 of the '483 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

101. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1 and 2 of the '483 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter*

alia, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

102. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1 and 2 of the '483 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

103. As a non-limiting example of each Defendant's infringement of the '483 Patent, set forth in Ex. L, is a preliminary claim chart showing infringement of exemplary claims 1 and 2 of the '483 Patent by Defendant OmniVision's -OV8850 and OV13850 CMOS image sensor products.

104. Upon information and belief, each Defendant's infringement of the '483 Patent by the OV8850 and OV1350 products is representative of and proof of each Defendant's infringement of the '483 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision

Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '483 Patent.

105. Defendant OmniVision has been on notice of the '483 Patent and Defendant's infringement of the '483 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the '483 patent.

106. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '483 Patent and each defendant's respective infringement of the '483 Patent, since, at least, the date of this Complaint.

107. Upon information and belief, Defendant OmniVision's continued infringement of the '483 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant OmniVision's prior knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '483 Patent.

108. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any semiconductor devices encompassed by the claims in the '483 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

109. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '483 Patent is willful. Each Defendants willful infringement of the '483 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

110. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. 8,854,521

111. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

112. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '521 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

113. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '521 patent in violation of 35 U.S.C.

§271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

114. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '521 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

115. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '521 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States. 116. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '521 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

117. As a non-limiting example of each Defendant's infringement of the '521 Patent, set forth in Ex. M, is a preliminary claim chart showing infringement of exemplary claim 1 of the '521 Patent by Defendant OmniVision's OV8850 CMOS image sensor product.

118. Upon information and belief, each Defendant's infringement of the '521 Patent by the OV8850 product is representative of and proof of each Defendant's infringement of the '521 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision Products.. The Accused '521 Devices comprise the same, or substantially similar, structural features pertinent to infringement of the '521 Patent.

119. Defendant OmniVision has been on notice of the '521 Patent and Defendant OmniVision's infringement of the '521 Patent since at least 2015

pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the Toshiba's patents related to CMOS image sensor technology.

120. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '521 Patent and each defendant's respective infringement of the '521 Patent, since, at least, the date of this Complaint.

121. Upon information and belief, Defendant OmniVision's continued infringement of the '521 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant OmniVision's prior knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '521 Patent.

122. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any semiconductor devices encompassed by the claims in the '521 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

123. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '521 Patent is willful. Each Defendants willful infringement of the '521 Patent renders this an exceptional case

within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

124. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT VI: INFRINGEMENT OF U.S. PATENT NO. RE46123

125. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

126. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1-4, 6-8 of the '123 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

127. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '123 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant

OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents.

128. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 11-4, 6-8 of the '123 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

129. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims 1-4, 6-8 of the '123 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

130. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claims

1-4, 6-8 of the '123 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

131. As a non-limiting example of each Defendant's infringement of the '123 Patent, set forth in Ex. N, is a preliminary claim chart showing infringement of exemplary claims 1-4, 6-8 of the '123 Patent by Defendant OmniVision's OV8850 and OV13850 CMOS image sensor products.

132. Upon information and belief, each Defendant's infringement of the '123 Patent by the OV8850 product is representative of and proof of each Defendant's infringement of the '123 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '123 Patent.

133. Defendant OmniVision has been on notice of the '123 Patent and Defendant's infringement of the '123 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the

Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying the '123 patent.

134. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '123 Patent and each defendant's respective infringement of the '123 Patent, since, at least, the date of this Complaint.

135. Upon information and belief, Defendant OmniVision's continued infringement of the '123 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant OmniVision's knowledge of its infringement, Defendant has failed to stop infringing the '123 Patent.

136. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any semiconductor devices encompassed by the claims in the '123 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

137. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '123 Patent is willful. Each Defendants willful infringement of the '123 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

138. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

COUNT VI: INFRINGEMENT OF U.S. PATENT NO. 8,178,913

139. Plaintiff incorporates by reference the allegations set forth in the preceding paragraphs.

140. Defendant OmniVision has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '913 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling CMOS imaging sensor products including but not limited to device model numbers listed in Ex. H ("Accused OmniVision Products"), in this judicial district and elsewhere throughout the United States.

141. As discussed in more detail in the General Allegations Section, Defendant OmniVision has and continues to intentionally induce others, including the Direct Infringers, to directly infringe the '913 patent in violation of 35 U.S.C. §271(b), and those actions are undertaken with the specific intent that they will, in fact, induce direct infringement and with full knowledge that Defendant OmniVision's products infringe one or more claims of each of the Patents-in-Suit both literally and/or under the doctrine of equivalents. 142. Defendant Texas Instruments has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '913 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Automotive ADAS system-on-chip (SoC) processors TDA2x, TDA2Eco and TDA3x, which incorporates OmniVision's 10635 image sensor, in this judicial district and elsewhere throughout the United States.

143. Defendant Smart Eye has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '913 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating one or more of the Accused OmniVision Products, such as, *inter alia*, Smart Eye's 2-megapixel imaging solution which incorporates OmniVision's CMOS imaging sensor product numbers OV2311, in this judicial district and elsewhere throughout the United States.

144. Defendant SMK has directly infringed and is infringing literally and/or under the doctrine of equivalents, in violation of the §271(a) at least claim 1 of the '913 Patent at least during the period prior to the expiration of the patent by making, using, importing, offering for sale and/or selling products incorporating

one or more of the Accused OmniVision Products, such as, *inter alia*, the Tesla Backup Camera, which incorporates OmniVision's CMOS imaging sensor product numbers OV10635, in this judicial district and elsewhere throughout the United States.

145. As a non-limiting example of each Defendant's infringement of the '913 Patent, set forth in Ex. O, is a preliminary claim chart showing infringement of exemplary claim 1 of the '913 Patent by Defendant OmniVision's OV8850 and OV13850 CMOS image sensor products.

146. Upon information and belief, each Defendant's infringement of the '913 Patent by the OV8850 product is representative of and proof of each Defendant's infringement of the '913 Patent by all of the Accused OmniVision Products as well as products incorporating the Accused OmniVision Products. The Accused OmniVision Products comprise the same, or substantially similar, structural features pertinent to infringement of the '913 Patent.

147. Defendant OmniVision has been on notice of the '913 Patent and Defendant OmniVision's infringement of the '913 Patent since at least 2015 pursuant to correspondence between Toshiba and OmniVision, and at least, March 3, 2016 pursuant to a letter to Shaw Hong, Chief Executive Officer and Chairman of the Board for OmniVision, and Y. Vicky Chou, Senior Vice President of Global Management and General Counsel for OmniVision, identifying Toshiba's patents

related to CMOS image sensor technology, and a patent within the same family as the '913 patent.

148. Defendants Texas Instruments, Smart Eye and SMK have each been on notice of the '913 Patent and each defendant's respective infringement of the '913 Patent, since, at least, the date of this Complaint.

149. Upon information and belief, Defendant OmniVision's continued infringement of the '913 Patent has been and continues to be willful since at least 2015, and warrants the enhancement of damages awarded as a result of its infringement. In particular, despite Defendant OmniVision's knowledge of its infringement, Defendant OmniVision has failed to stop infringing the '913 Patent.

150. Defendants are not licensed or otherwise authorized to make, use, import, sell or offer to sell any semiconductor devices encompassed by the claims in the '913 Patent, and Defendants' conduct is, in every instance, without Plaintiff's consent.

151. Upon information and belief, Defendants Texas Instruments', Smart Eye's and SMK's respective infringement of the '913 Patent is willful. Each Defendants willful infringement of the '913 Patent renders this an exceptional case within the meaning of 35 U.S.C. §285, justifying an award to Plaintiff of its reasonable attorney fees and costs incurred in connection with this litigation.

152. By reason of Defendants' infringing activities, Plaintiff has suffered, and will continue to suffer, substantial damages in an amount to be proven at trial.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff requests this Court enter judgment as follows:

A. That the '509, '676, '926, '483, '521, '123 and '913 patents are valid and enforceable;

B. That Defendant OmniVision has directly and indirectly infringed the '509 Patent, the '676 Patent, the '926 Patent, the '483 Patent, the '521 Patent, the '123 Patent, and '913 Patent;

C. That Defendant Texas Instruments, Smart Eye and SMK have directly infringed the '509 Patent, the '676 Patent, the '926 Patent, the '483 Patent, the '521 Patent, the '123 Patent, and '913 Patent;

D. That such infringement is willful;

E. That Defendants account for and pay to Plaintiff all damages pursuant to 35 U.S.C. § 284 to adequately compensate Plaintiff for Defendants' infringement of the Patents-in-Suit, but in no event less than a reasonable royalty for the use made by Defendants of the invention set forth in the Patents-in-Suit;

F. That Plaintiff receives enhanced damages, in the form of treble damages, pursuant to 35 U.S.C. § 284;

G. That this is an exceptional case under 35 U.S.C. § 285;

H. That Defendants pay Plaintiff all of Plaintiff's reasonable attorneys' fees and expenses pursuant to 35 U.S.C. § 285;

I. That Plaintiff be granted pre-judgment and post-judgment interest in accordance with 35 U.S.C. § 284 on the damages caused to it by reason of Defendants' infringement of the Patents-in-Suit, including pre-judgment and post-judgment interest on any enhanced damages or attorneys' fees award;

J. That costs be awarded in accordance with 35 U.S.C. § 284 to Plaintiff; and

K. That Plaintiff be granted such other and further relief as the Court may deem just and proper under the circumstances.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a trial by jury on all issues so triable in this action.

Dated: April 29, 2019

Respectfully submitted,

By: /s/ Jaye Quadrozzi Jaye Quadrozzi Rodger D. Young YOUNG & ASSOCIATES Orchards Corporate Center 27725 Stansbury Boulevard, Suite 125 Farmington Hills, Michigan 48334 Quadrozzi@youngpc.com +1 248 353 8620 (t) +1 248 479 7828 (f)

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Attorneys for Plaintiff

CERTIFICATE OF SERVICE

I hereby certify that on April 29, 2019, I, Zachary D. Silbersher,

electronically filed the foregoing paper with the Clerk of the Court using the ECF

system which will send notification of such filing to all counsel of record,

including counsel for defendant OmniVision Technologies, Inc.

By: <u>/s/Zachary D. Silbersher</u> Zachary D. Silbersher KROUB, SILBERSHER & KOLMYKOV PLLC 305 Broadway, 7th Floor New York, NY 10007 (212) 323-7442 zsilbersher@kskiplaw.com