UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

KATANA SILICON TECHNOLOGIES LLC, Plaintiff, v. MICRON TECHNOLOGY, INC.; MICRON SEMICONDUCTOR PRODUCTS, INC.; and MICRON TECHNOLOGY TEXAS, LLC, Defendants.	§ § § § § § § § § § § § § § §	Case No. 1:22-cv-00214 JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Katana Silicon Technologies LLC ("Katana"), by and through its attorneys, for its Complaint against Defendants Micron Technology, Inc; Micron Semiconductor Products, Inc.; and Micron Technology Texas, LLC (collectively "Defendants" or "Micron"), and demanding trial by jury, hereby alleges, on information and belief regarding the actions of Micron and on knowledge with regard to its own actions, as follows:

I. NATURE OF THE ACTION

1. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 271, *et seq.*, to obtain damages resulting from Defendants' unauthorized use, sale, and offer to sell in the United States, of products, methods, processes, services and/or systems that infringed Plaintiff's United States patents, as described herein.

2. Defendants manufactured, provided, used, sold, offered for sale, imported, and/or distributed infringing products and services, and encouraged others to use their products and services in an infringing manner, as set forth herein.

3. Plaintiff seeks past damages and prejudgment and post-judgment interest for Defendants' infringement of the Asserted Patents, as defined below.

II. PARTIES

4. Plaintiff Katana Silicon Technologies LLC is a limited liability company organized and existing under the laws of the State of Texas, with its principal place of business located at 5204 Bluewater Drive, Frisco, Texas 75036.

5. Katana is the owner of the entire right, title, and interest in the Asserted Patents, as defined below, including the right to sue for and collect all damages and to seek and obtain any other relief for infringement.

6. Defendant Micron Technology, Inc. ("Micron Technology") is a Delaware corporation with a principal place of business at 8000 South Federal Way, Boise, Idaho 83716. Micron Technology also has a place of business at 101 West Louis Henna Boulevard, Suite 210,Austin, Texas 78728. Micron Technology is registered with the Texas Secretary of State to do business in Texas.

7. Defendant Micron Semiconductor Products, Inc. ("Micron Semiconductor") is an Idaho corporation with a principal place of business at 8000 South Federal Way, Boise, Idaho 83716. Micron Semiconductor also has a place of business at 101 West Louis Henna Boulevard,Suite 210, Austin, Texas 78728. Micron Semiconductor is registered with the Texas Secretary of State to do business in Texas.

Micron Semiconductor can be served through its registered agent, The Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701-3218.

8. Defendant Micron Technology Texas, LLC ("Micron Texas") is an Idaho limited liability company with a principal place of business at 8000 South Federal Way, Boise, Idaho 83716. Micron Texas also has places of business at 101 West Louis Henna Boulevard, Suite 210, Austin, Texas 78728; and 805 Central Expressway South #100, Allen, Texas 75013. Micron Texas can be served through its registered agent, The Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701-3218.

9. Micron produces computer memory and computer data storage including dynamic random access memory (DRAM), flash memory, NAND flash memory, and other memory products. Micron sells its products to customers, including customers in this District, in the computer, networking and storage, consumer electronics, solid-state drives, and mobile telecommunications markets.

III. JURISDICTION AND VENUE

10. This is an action for patent infringement, which arises under the patent laws of the United States; in particular, 35 U.S.C. §§ 271, 281, 283, 284, and 285.

11. This Court has exclusive jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331, 1332, and 1338(a).

12. This Court has personal jurisdiction over Defendants in this action pursuant to due process and/or the Texas Long Arm Statute, by virtue of at least the substantial business the Defendants conducts in this forum.

13. Defendants have committed acts of infringement in this District directly and through third parties by, among other things, making, selling, advertising (including through websites), offering to sell, distributing, and/or importing products and/or services that have infringed and continue to infringe the Asserted Patents as defined below.

14. Defendants have, directly or through their distribution network, purposefully and voluntarily placed infringing products in the stream of commerce knowing and expecting them to be purchased and used by consumers in Texas.

15. Defendants have committed direct infringement in Texas.

16. Defendants have committed indirect infringement based on acts of direct infringement in Texas.

17. Defendants have transacted, and as of the time of filing of the Complaint, continue to transact business, within this District.

18. Defendants derive substantial revenues from their infringing acts in this District, including from their manufacture and sale of infringing products in the United States.

19. Defendants have at least one regular and established place of business in this District, including a regional office located at 101 West Louis Henna Boulevard, Suite 210, Austin, Texas 78728. The Travis Central Appraisal District

(CAD) website indicates that both Micron Technology andMicron Semiconductor own property at 101 West Louis Henna Boulevard, Suite 210, Austin,Texas 78728, and that in 2021, it was appraised at almost $2 million.

20. Venue is proper against Defendants in this District pursuant to 28 U.S.C. § 1400(b) because Defendants have a regular and established place of business and have committed acts of infringement in this District. Defendants' presence in this District is substantial, including at least at their regional office and design center located in Austin, Texas.

21. Additionally, Defendants—directly or through intermediaries (including distributors, retailers, and others), subsidiaries, alter egos, and/or agents—have made, shipped, distributed, offered for sale, and/or sold their products in the United States and this District. Defendants have purposefully and voluntarily placed into the stream of commerce one or more of their products that infringed the Asserted Patents (as defined below) with the awareness and/or intent that the products would be purchased by consumers and businesses in this District. Defendants knowingly and purposefully shipped infringing products into, out of, and within this District through an established distribution channel. These infringing products have been purchased by consumers and businesses in this District.

IV. COUNTS OF PATENT INFRINGEMENT

22. Plaintiff alleges that Defendants have infringed the following United States patents (collectively, the "Asserted Patents"):

United States Patent No. RE38,806 (the "'806 Patent") (Exhibit A)
United States Patent No. 6,352,879 (the "'879 Patent") (Exhibit B)

United States Patent No. 6,731,013 (the "'013 Patent") (Exhibit C)

COUNT ONE
INFRINGEMENT OF U.S. PATENT RE38,806

23. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

24. The '806 Patent, entitled "SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME," was filed on May 02, 2003 and duly and legally issued by the United States Patent and Trademark Office on October 04, 2005. The '806 Patent is a reissue of U.S. Patent No. 6,229,217, which was filed on June 27, 2000 and issued on May 8, 2001. The '806 Patent is a continuation from U.S. Patent Application No. 09/223,272 (now U.S. Patent 6,100,594), which was filed on December 30, 1998. The '806 Patent claims priority to Japanese Patent Application JP00522198A, filed on January 14, 1998 (now Japanese Patent No. JP3481444B2).

25. The '806 Patent claims patent-eligible subject matter and is valid and enforceable.

Technical Description and Background

26. The '806 Patent is directed to a semiconductor device that may have a Chip Size Package ("CSP") structure, and a method of manufacturing such a semiconductor device. '806 Patent, 1:18-20. Transistors are semiconductor devices that are formed on wafers, which are made by foundries. Wafers contain multiple, essentially identical chips which are designed by chip designers. Individual chips are cut from wafers and packaged. Those chips go into a variety of consumer products, such as smartphones, tablets, personal computers, solid state drives (SSDs), memory

cards, thumb drives, and automobile parts and components. In some devices such as portable devices, a plurality of semiconductor chips are mounted in a package so as to increase the added value and capacity of memory, etc. For example, a multi-chip module is provided with a plurality of semiconductor chips arranged parallel to each other in a package. However, such an arrangement makes it impossible to produce a package smaller than the total area of the semiconductor chips to be mounted. In order to overcome this size limitation, a stacked package including a plurality of semiconductor chips laminated in a package to achieve a high packaging density was developed. '806 Patent, 1:53-63. Despite the relatively small size and high density of the stacked-package semiconductor devices, semiconductor packages that are even smaller than such a stacked-package semiconductor device were required. Hence, a semiconductor device having a CSP structure as well as stacked-package structure was needed. '806 Patent, 2:10-15.

27. Specifically, the '806 Patent provides a further miniaturized semiconductor device that may have a stacked-package structure as well as a CSP structure. '806 Patent, 2:63-65. In order to achieve such a miniaturized, high-density semiconductor device structure, the '806 Patent claims the first semiconductor chip and the second semiconductor chip are each wire-bonded to the electrode section provided on the wiring layer with the wires, and the second insulating adhesion layer is used for affixing the second semiconductor chip to the first semiconductor chip. This structure eliminates the need for wire-bonding the first and second semiconductor chips to points on the wiring layer, far from the side surfaces of the

first and second semiconductor chips, considering a situation in which the excessively applied adhesive agent overflows the space between the first and second semiconductor chips. ’806 Patent, 3:19-29. Moreover, in the case of using a thermo-compression sheet, accurate positioning is required twice when mounting the first or second semiconductor chip at a desired location, i.e., positioning the thermo-compression sheet and positioning the first or second semiconductor chip on the thermo-compression sheet. Whereas, because in the present invention the first and the second insulating adhesion layers are in advance disposed on the back surface of the first and the second semiconductor chips, the first and the second semiconductor chips can be mounted at a desired location by accurately positioning it only once. Hence, the ’806 Patent simplifies the manufacturing process of miniaturized semiconductors. ’806 Patent, 3:33-44.

28. The ’806 Patent introduces a manufacturing method in which the adhesive agent does not overflow in the space between the first and the second semiconductor chip, and the first and the second semiconductor chip can be wire-bonded to the wiring layer at a location closer to the edges of the first and the second semiconductor chips. It is thus possible to realize a miniaturized, high-density semiconductor device. ’806 Patent, 4:57-63.

Direct Infringement

29. Defendant, without authorization or license from Plaintiff, has directly infringed the ’806 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes),

designing, manufacturing, importing, distributing, selling, and offering for sale electronic devices and products that infringe one or more claims of the ’806 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271.

30. Exemplary infringing products include Micron’s chip arrangements, flash memory, SSDs, and memory cards made by or incorporating Micron’s products, such as its NAND flash memories or memory cards, including but not limited to the Micron memory products employing the ’806 Patent. These infringing products include but are not limited to the Micron LPDDR4 SDRAM MT53D768M64D4SQ-046_WT_A 2019, Micron Memory MT53E512M32D2NP, Micron RLDRAM 3 MT44K32M36RCT-125, Micron DRAM LPDDR4 12G 384MX32 FBGA XT DDP MT53E384M32D2DS-053, Micron FLASH - NAND Memory IC 128Gb (16G x 8) MMC 100-TBGA MTFC16GAKAENA-4M_IT_TR, Micron LPDDR4X MT53D512M64D4NZ-046_WT_E, Micron 32L 3D NAND Flash memory MT29F768G08EEHBBJ4, LPDDR4 SDRAM MT53E256M64D4NZ-053_WT_B DRAM Memory Device, Micron MT29VZZZCDAFQKWL-046_W.G0L Multichip Memory Device, Micron LPDDR5 MT62F1536M64D8CH-031_WT_A DRAM Memory Device, Micron LPDDR4 SDRAM MT53D512M64D4DG-046_XT_F DRAM Memory Device, MT29F2T08GELBEJ4_B NAND Flash Memory Device, Micron LPDDR4X MT53E1G32D4NQ-046_WT_E SDRAM Memory Device, MT29VZZZAD8DQKSL-046_W.9K8 mixed NAND and LPDDR4 DRAM Memory Device, and similar products, hereinafter “’806 Accused Products.”

31. Plaintiff names these exemplary infringing instrumentalities to serve as notice of Defendants' infringing acts, but Plaintiff reserves the right to name additional infringing products, known to or learned by Plaintiff or revealed during discovery, and include them more specifically in the definition of '806 Accused Products.

32. As a specific, nonlimiting example, Defendant is liable for direct infringement pursuant to 35 U.S.C. § 271 for the manufacture, sale, offer for sale, importation, or distribution of Micron's MT29F768G08EEHBBJ4 32L 3D NAND Flash Memory semiconductor device, hereinafter "'806 Exemplary Accused Product." The '806 Exemplary Accused Product meets all limitations of at least claim 1 of the '806 Patent, either literally or under the doctrine of equivalents.

33. The '806 Exemplary Accused Product is a semiconductor device including a stacked package structure and a chip size package structure, comprising: an insulating substrate (A) including a wiring layer (B) having electrode sections (C):

Fig 1: Package X-ray image (upper) and Cross-Sectional SEM Image(Lower) of the Package

34. The ’806 Exemplary Accused Product further comprises a first semiconductor chip (D) having a first adhesion layer (E) adhered to its back surface (F) where a circuit is not formed (G), said first semiconductor chip being mounted on said wiring layer through the first adhesion layer (H):

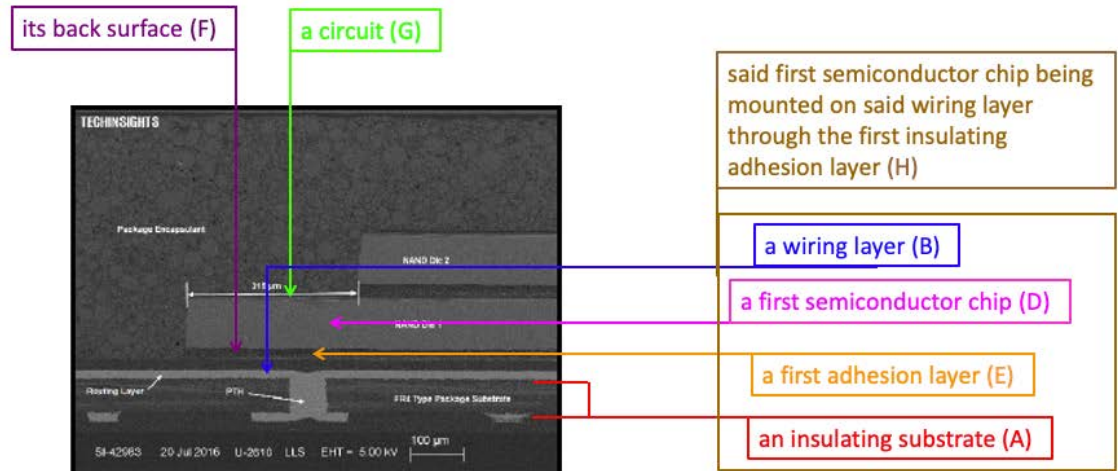

Figure 1.1.5: Left and right edges of

Fig 2: Cross-Sectional SEM Image of the Package

35. The ’806 Exemplary Accused Product further comprises a second semiconductor chip (I) having a second adhesion layer (J) adhered to its back surface (K) where a circuit is not formed (L), said second semiconductor chip being mounted on a circuit-formed front surface of said first semiconductor chip through the second adhesion layer (M):

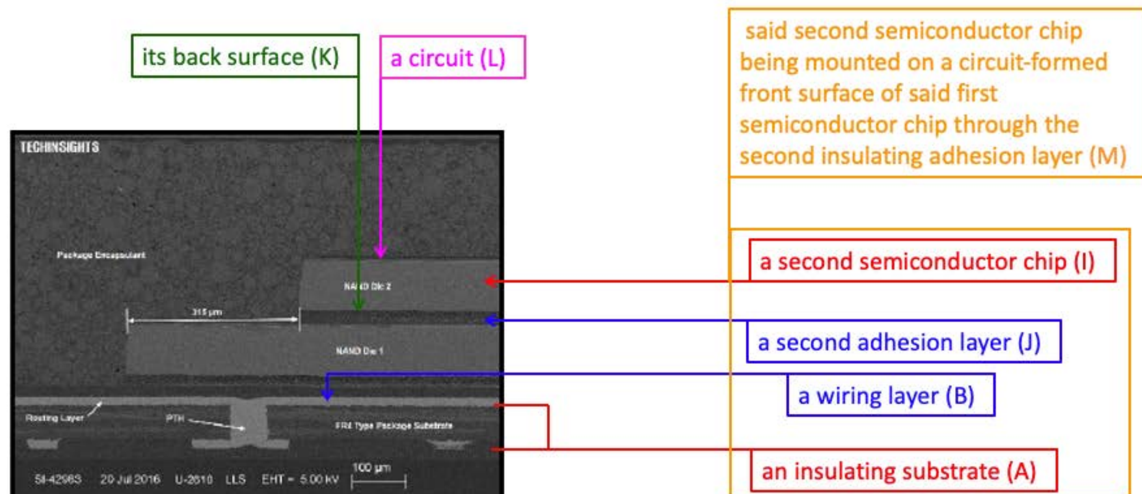

Figure 1.1.5: Left and right edges of
Fig 3: Cross-Sectional SEM Image of the Package

36. In the ’806 Exemplary Accused Product, each of said first and second semiconductor chips being wire-bonded to the electrode section with a wire (N), said first and second semiconductor chips and the wire being sealed with a resin (O):

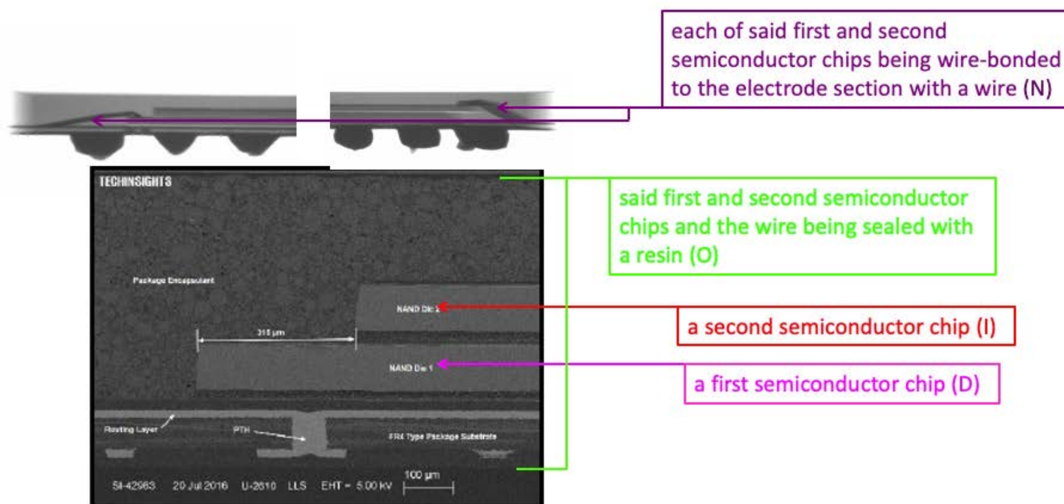

Figure 1.1.5: Left and right edges of
Fig 4: Package X-ray image (upper) and Cross-Sectional SEM Image(Lower) of the Package

Willful Infringement

37. Defendants had actual knowledge of the ’806 Patent and its infringement thereof at least as of receipt of Plaintiff’s notice letter dated August 22, 2018.

38. Defendants have numerous lawyers and other active agents of Defendant who regularly review patents and published patent applications relevant to technology in the fields of the Asserted Patents.

39. Defendants have been issued over 8,000 patents held in the name of the Defendant or a related entity, many of which are patents prosecuted in the USPTO in the same technology area as the ’806 Patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the ’806 Patent prior to the commencement of this lawsuit will be confirmed during discovery.

40. Defendants’ infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendants.

41. Notwithstanding this knowledge, Defendants knowingly or with reckless disregard infringed the ’806 Patent. Defendants continued to commit acts of infringement despite being on notice of infringement and aware of an objectively high likelihood that its actions constituted infringement of Plaintiff’s valid patent rights, either literally or equivalently.

42. Defendants are therefore liable for willful infringement, and Plaintiff accordingly seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect, Induced, and Contributory Infringement

43. Defendants, directly and/or through its subsidiaries, affiliates, agents, and/or business partners, committed acts of indirect infringement of at least one claim of the '806 Patent, pursuant to 35 U.S.C. §§ 271(b) and (c) by actively inducing or contributing to the acts of direct infringement performed by others in the United States, the State of Texas, and the Western District of Texas.

44. Defendants induced through affirmative acts its distributors, manufacturers, testers, customers, and/or end users, such as designers of Defendant's chips and end users of Defendants' chips, to directly infringe the '806 Patent by making, using, selling, and/or importing the Accused Products, with the specific intent to induce acts constituting infringement, and knowing that the induced acts constituted patent infringement, either literally or equivalently.

45. Defendants knowingly contributed to direct infringement by its customers through affirmative acts and by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the '806 Accused Products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

46. The affirmative acts of inducement by Defendants include, but are not limited to, any one or a combination of: (i) designing infringing chips for manufacture according to specification; (ii) collaborating on and/or funding the development of the infringing chips and/or technology; (iii) soliciting and sourcing the manufacture of

infringing chips; (iv) licensing and transferring technology and know-how to enable the manufacture of infringing chips; (v) enabling and encouraging the use, sale, or importation of infringing chips by its customers; (vi) advertising the infringing chips and/or technology; and (vii) providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, product specifications, user manuals, marketing materials, and instructions, including on Defendants' websites.

47. Defendants contributed to the direct infringement of the '806 Patent, its customers, and other third parties; and Defendants, its customers, and other third parties directly infringed.

48. Defendants imported, exported, made and/or sold parts, components, or intermediate products to customers and third parties that, once assembled, infringed the '806 Patent by the sale and/or use of the assembled memories and/or devices.

49. Defendants made, used, sold, and/or offered to sell infringing devices and/or memory products, which are especially made to design and specification, and are not staple products or commodities with substantial non-infringing use.

50. Defendants knew that the induced conduct would constitute infringement and intended that infringement at the time of committing the aforementioned acts, such that the acts and conduct were committed with the specific intent to induce infringement, or deliberately avoiding learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

51. As a result of Defendants' infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

52. Plaintiff has incurred substantial damages, including monetary damages.

53. Therefore, Plaintiff is entitled to actual and/or compensatory damages, reasonable royalties, pre-judgment and post-judgment interest, enhanced damages, and costs.

COUNT TWO
INFRINGEMENT OF U.S. PATENT 6,352,879

54. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

55. The '879 Patent, entitled "SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME," was filed on June 27, 2000 and duly and legally issued by the United States Patent and Trademark Office on March 5, 2002. The '879 Patent is a division of U.S. Patent No. 6,100,594, which was filed on December 30, 1998 and issued on August 8, 2000. The '879 Patent is a division of U.S. Patent Application no. 09/223,272, filed on December 30, 1998 (now U.S. Patent No. 6,100,594). The '879 Patent claims priority to Japanese Patent Application JP 00522198A, filed January 14, 1998 (now Japanese Patent JP3481444B2).

56. The '879 Patent claims patent-eligible subject matter and is valid and enforceable.

Technical Description and Background

57. The ’879 Patent is directed to a semiconductor device that may have a Chip Size Package (“CSP”) structure, and a method of manufacturing such a semiconductor device. ’879 Patent, 1:13-15. Transistors are semiconductor devices that are formed on wafers, which are made by foundries. Wafers contain multiple, essentially identical chips which are designed by chip designers. Individual chips are cut from wafers and packaged. Those chips go into a variety of consumer products, such as smartphones, tablets, personal computers, solid state drives (SSDs), memory cards, thumb drives, and automobile parts and components. In some devices such as portable devices, a plurality of semiconductor chips are mounted in a package so as to increase the added value and capacity of memory, etc. For example, a multi-chip module is provided with a plurality of semiconductor chips arranged parallel to each other in a package. However, such an arrangement makes it impossible to produce a package smaller than the total area of the semiconductor chips to be mounted. In order to overcome this size limitation, a stacked package including a plurality of semiconductor chips laminated in a package to achieve a high packaging density was developed. ’879 Patent, 1:49-59. Despite the relatively small size and high density of the stacked-package semiconductor devices, semiconductor packages that are even smaller than such a stacked-package semiconductor device were required. Hence, a semiconductor device having a CSP structure as well as stacked-package structure was needed. ’879 Patent, 2:6-11.

58. Specifically, the ’879 Patent provides a further miniaturized semiconductor device that may have a stacked-package structure as well as a CSP structure. ’879 Patent, 2:63-65. In order to achieve such a miniaturized, high-density semiconductor device structure, the ’879 Patent claims the first semiconductor chip and the second semiconductor chip are each wire-bonded to the electrode section provided on the wiring layer with the wires, and the second insulating adhesion layer is used for affixing the second semiconductor chip to the first semiconductor chip. This structure eliminates the need for wire-bonding the first and second semiconductor chips to points on the wiring layer, far from the side surfaces of the first and second semiconductor chips, considering a situation in which the excessively applied adhesive agent overflows the space between the first and second semiconductor chips. ’879 Patent, 3:14-24. Moreover, in the case of using a thermo-compression sheet, where twice accurate positioning is required when mounting the first or second semiconductor chip at a desired location, i.e., positioning the thermo-compression sheet and positioning the first or second semiconductor chip on the thermo-compression sheet. Whereas, because in the present invention the first and the second insulating adhesion layers are in advance disposed on the back surface of the first and the second semiconductor chips, the first and the second semiconductor chips can be mounted at a desired location by accurately positioning it only once. Hence, the ’879 Patent simplifies the manufacturing process of miniaturized semiconductors. ’879 Patent, 3:27-39.

59. The ’879 Patent introduces a manufacturing method in which the adhesive agent does not overflow in the space between the first and the second semiconductor chip, and the first and the second semiconductor chip can be wire-bonded to the wiring layer at a location closer to the edges of the first and the second semiconductor chip. It is thus possible to realize a miniaturized, high-density semiconductor device. ’879 Patent, 4:54-60.

Direct Infringement

60. Defendants, without authorization or license from Plaintiff, has directly infringed the ’879 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), designing, manufacturing, importing, distributing, selling, and offering for sale electronic devices and products that are made by a method that infringe one or more claims of the ’879 Patent. Defendants have further provided services that practice methods that infringe one or more claims of the ’879 Patent. Defendants are thus liable for direct infringement pursuant to 35 U.S.C. § 271.

61. Exemplary infringing products include Micron chip arrangements, flash memory, SSDs, and memory cards made by or incorporating Micron products, such as its NAND flash memories or memory cards, including but not limited to the NAND flash memory products employing the ’879 Patent. These infringing products include but are not limited to the Micron LPDDR4 SDRAM MT53D768M64D4SQ-046_WT_A 2019, Micron Memory MT53E512M32D2NP, Micron RLDRAM 3 MT44K32M36RCT-125, Micron DRAM LPDDR4 12G 384MX32 FBGA XT DDP

MT53E384M32D2DS-053, Micron FLASH - NAND Memory IC 128Gb (16G x 8) MMC 100-TBGA MTFC16GAKAENA-4M_IT_TR, Micron LPDDR4X MT53D512M64D4NZ-046_WT_E, Micron 32L 3D NAND Flash memory MT29F768G08EEHBBJ4, LPDDR4 SDRAM MT53E256M64D4NZ-053_WT_B DRAM Memory Device, Micron MT29VZZZCDAFQKWL-046_W.G0L Multichip Memory Device, Micron LPDDR5 MT62F1536M64D8CH-031_WT_A DRAM Memory Device, Micron LPDDR4 SDRAM MT53D512M64D4DG-046_XT_F DRAM Memory Device, MT29F2T08GELBEJ4_B NAND Flash Memory Device, Micron LPDDR4X MT53E1G32D4NQ-046_WT_E SDRAM Memory Device, MT29VZZZAD8DQKSL-046_W.9K8 mixed NAND and LPDDR4 DRAM Memory Device, and similar products, hereinafter "'879 Accused Products."

62. Plaintiff names these exemplary infringing instrumentalities to serve as notice of Defendants' infringing acts, but Plaintiff reserves the right to name additional infringing products, known to or learned by Plaintiff or revealed during discovery, and include them more specifically in the definition of '879 Accused Products.

63. As a specific, nonlimiting example, Defendants are liable for direct infringement pursuant to 35 U.S.C. § 271 for the manufacture, sale, offer for sale, importation, or distribution of Micron's MT29F768G08EEHBBJ4 32L 3D NAND Flash Memory semiconductor device, hereinafter "'879 Exemplary Accused Product." The '879 Exemplary Accused Product is made by a method that meets all limitations

of at least claim 1 of the ’879 Patent, either literally or under the doctrine of equivalents.

64. The ’879 Exemplary Accused Product is a semiconductor device manufactured by a method comprising forming a first adhesion layer (A) on a back surface of a first wafer on which no circuit is formed (B), a circuit being formed on a front surface of the first wafer (C):

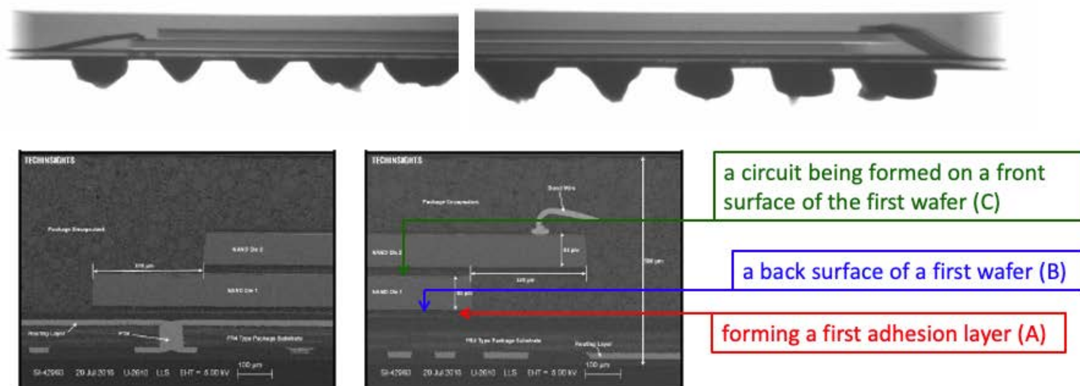

Figure 1.1.5: Left and right edges of NAND die stack in the package (SEM)

Fig 1: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

65. The ’879 Exemplary Accused Product is manufactured by producing separate first semiconductor chips from said first wafer by dicing (D):

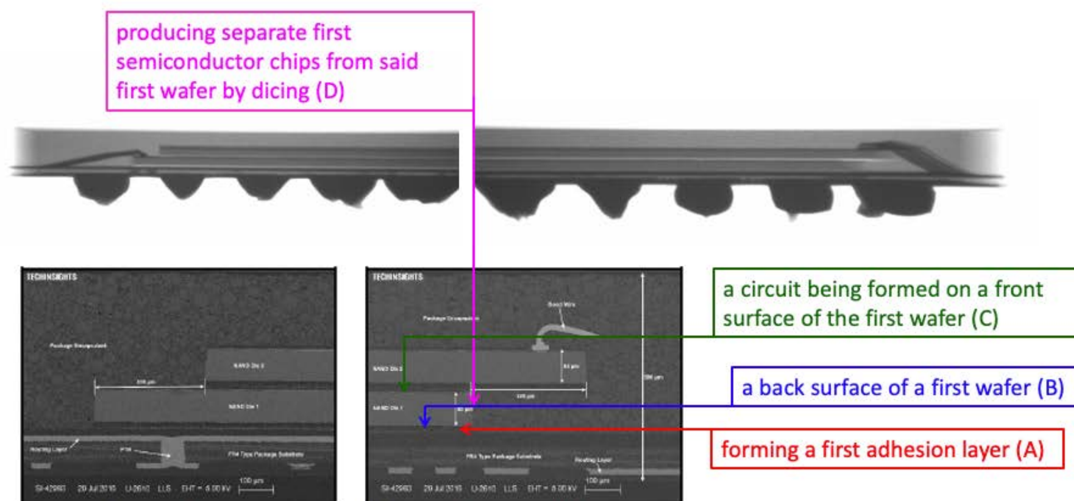

Fig 2: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

66. The '879 Exemplary Accused Product is manufactured by mounting said first semiconductor chips on a wiring layer (E) with the back surface of the first semiconductor chip facing said wiring layer (F):

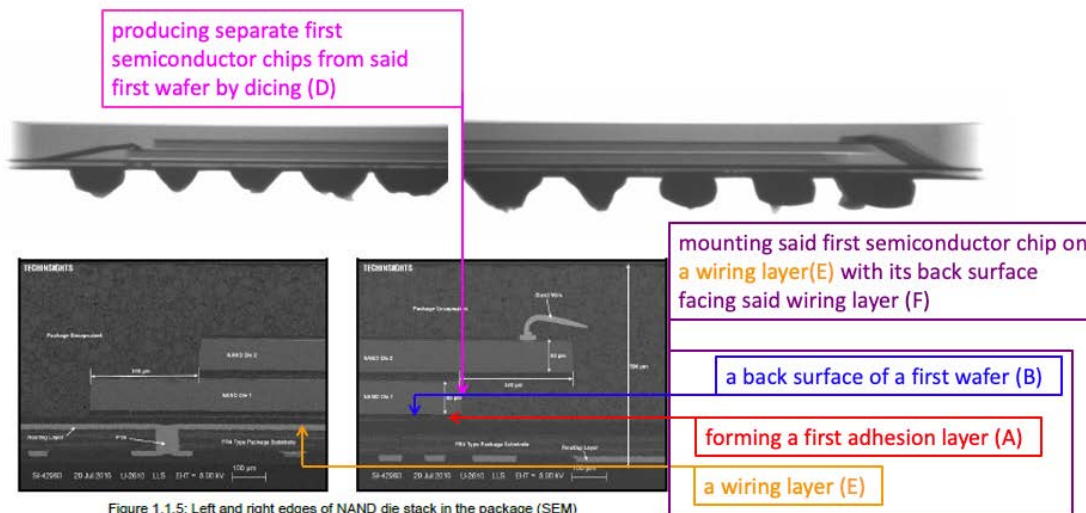

Fig 3: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

67. The '879 Exemplary Accused Product is manufactured by forming a second adhesion layer (G) on a back surface of a second wafer on which no circuit is formed (H), a circuit being formed on the front surface of the first wafer (I):

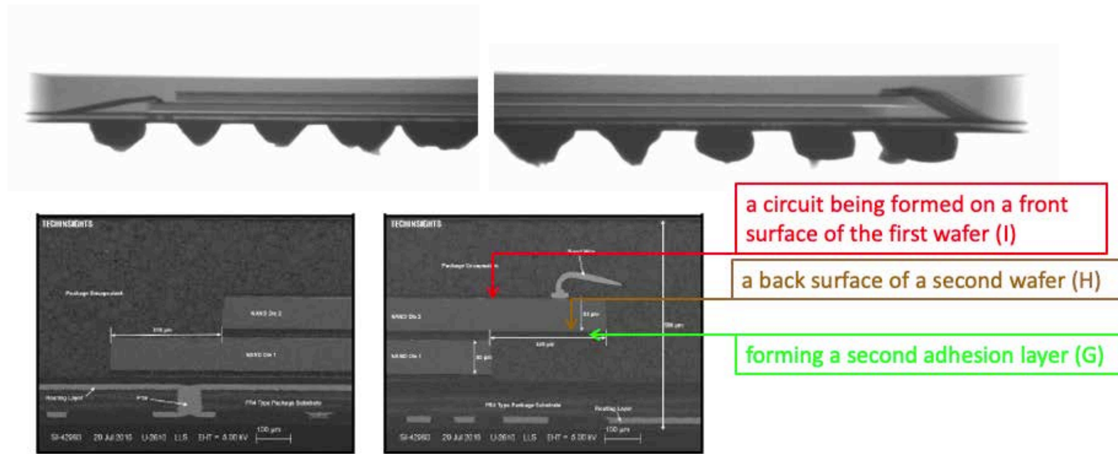

Fig 4: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

68. The '879 Exemplary Accused Product is manufactured by producing separate second semiconductor chips from said second wafer by dicing (J):

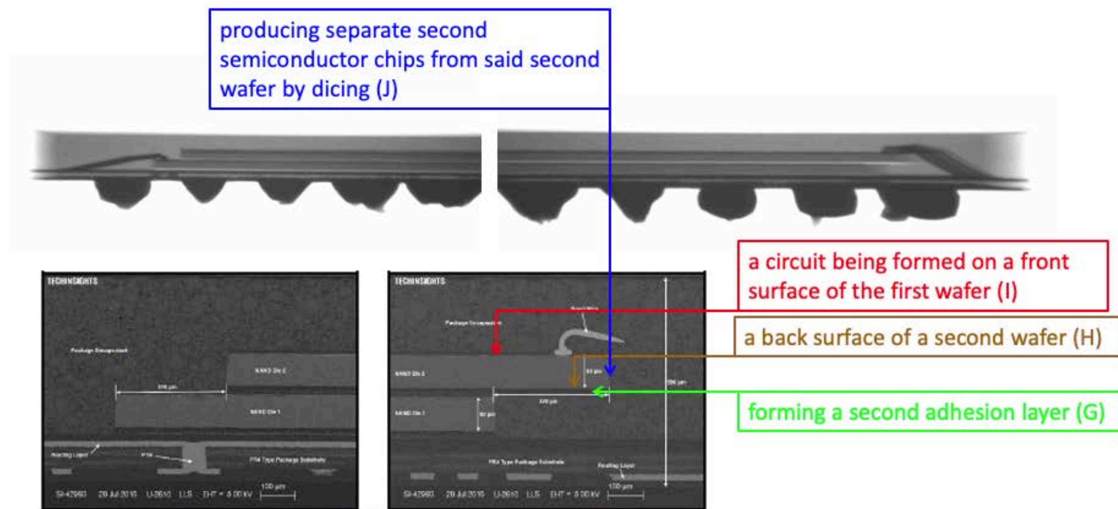

Fig 5: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

69. The '879 Exemplary Accused Product is manufactured by mounting said second semiconductor chip on said first semiconductor chip with its back surface facing said first semiconductor chip (K):

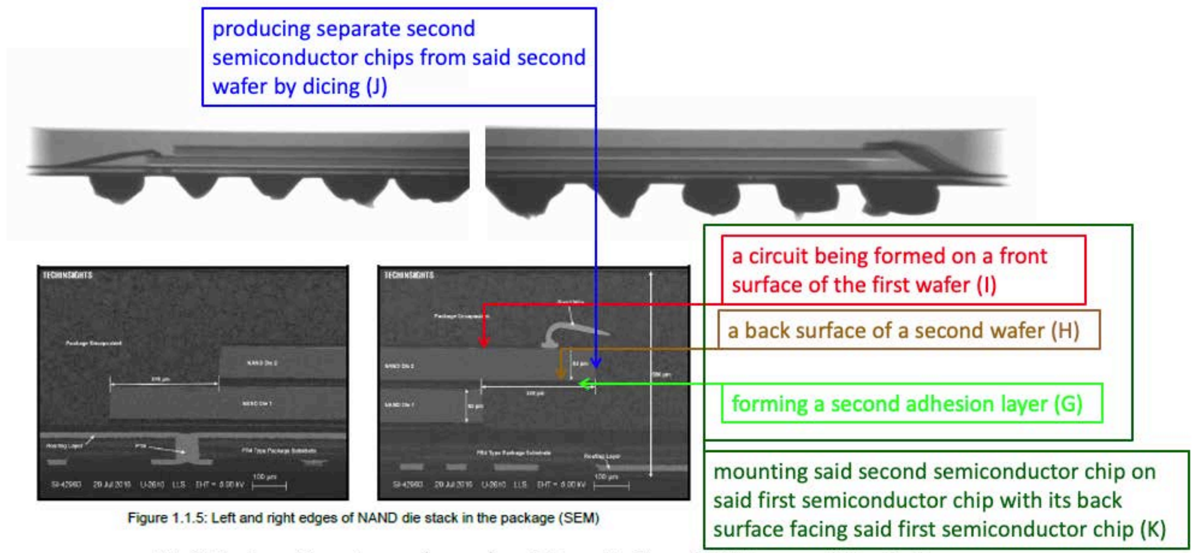

Fig 6: Package X-ray image (upper) and Cross-Sectional SEM Image of the Package

Willful Infringement

70. Defendants have had actual knowledge of the ’879 Patent and its infringement thereof at least as of receipt of Plaintiff’s notice letter dated August 22, 2018.

71. Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Asserted Patents.

72. Defendants have been issued over 8,000 patents held in the name of the Defendant or a related entity, many of which are patents prosecuted in the USPTO in the same technology area as the ’879 Patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances

and extent of Defendants obtaining actual knowledge of the ’879 Patent prior to the commencement of this lawsuit will be confirmed during discovery.

73. Defendants’ infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendant.

74. Notwithstanding this knowledge, Defendants knowingly or with reckless disregard infringed the ’879 Patent. Defendants continued to commit acts of infringement despite being on notice of an objectively high likelihood that its actions constituted infringement of Plaintiff’s valid patent rights, either literally or equivalently.

75. Defendants are therefore liable for willful infringement and Plaintiff accordingly seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect, Induced, and Contributory Infringement

76. Defendants, directly and/or through its subsidiaries, affiliates, agents, and/or business partners, committed acts of indirect infringement of at least one claim of the ’879 Patent, pursuant to 35 U.S.C. §§ 271(b) and (c), by actively inducing or contributing to the acts of direct infringement performed by others in the United States, the State of Texas, and the Western District of Texas.

77. Defendants induced through affirmative acts its distributors, manufacturers, testers, customers, and/or end users, such as designers of Defendants’ chips and end users of Defendants’ chips to directly infringe the ’879 Patent by making, using, selling, and/or importing the Accused Products, with the specific

intent to induce acts constituting infringement, and knowing that the induced acts constitute patent infringement, either literally or equivalently.

78. Defendants knowingly contributed to direct infringement by its customers through affirmative acts and by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the '879 Accused Products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

79. The affirmative acts of inducement by Defendants include, but are not limited to, any one or a combination of: (i) designing infringing chips for manufacture according to specification; (ii) collaborating on and/or funding the development of the infringing chips and/or technology; (iii) soliciting and sourcing the manufacture of infringing chips; (iv) licensing and transferring technology and know-how to enable the manufacture of infringing chips; (v) enabling and encouraging the use, sale, or importation of infringing chips by its customers; (vi) advertising the infringing chips and/or technology; and (vii) providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, product specifications, user manuals, marketing materials, and instructions.

80. Defendants contributed to the direct infringement of the '879 Patent by its customers, and other third parties; and Defendants, its customers, and other third parties directly infringed.

81. Defendants imported, exported, made and/or sold parts, components, or intermediate products to customers and third parties that, once assembled, infringed the ’879 Patent by the sale and/or use of the assembled memories and/or devices.

82. Defendants did make, use, sell, and/or offer to sell infringing semiconductor devices and/or memory products, which are especially made to design and specification, and are not staple products or commodities with substantial non-infringing use.

83. Defendants knew that the induced conduct would constitute infringement and intended that infringement at the time of committing the aforementioned acts, such that the acts and conduct were committed with the specific intent to induce infringement, or deliberately avoiding learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

84. As a result of Defendants’ infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 US.C. § 284.

85. Plaintiff has incurred substantial damages, including monetary damages.

86. Therefore, Plaintiff is entitled to actual and/or compensatory damages, reasonable royalties, pre-judgment and post-judgment interest, enhanced damages, and costs.

COUNT THREE
INFRINGEMENT OF U.S. PATENT 6,731,013

87. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

88. The '013 Patent, entitled "WIRING SUBSTRATE, SEMICONDUCTOR DEVICE AND PACKAGE STACK SEMICONDUCTOR DEVICE," was filed on June 5, 2001 and duly and legally issued by the United States Patent and Trademark Office on May 4, 2004. The '013 Patent claims priority to Japanese Patent Application No. 2000-194732, filed on June 28, 2000.

89. The '013 Patent claims patent-eligible subject matter and is valid and enforceable.

Technical Description and Background

90. The '013 Patent is directed to a semiconductor device which provides a wiring substrate, a semiconductor device, and a package stack semiconductor device, all with improved reliability of connection by suppressing the occurrence of inadequate electrical connection. '013 Patent, 3:60-64. According to the '013 Patent, the known arrangement of semiconductor chips presented a problem, where there is inadequate wire bonding incurred between the semiconductor chip and the terminal section. '013 Patent, 2:65-3:2. The '013 Patent illustrates some of these problems, such as when the load is applied on the terminal section in a direction of thickness of the insulating substrate to make connection, which causes deformation of the insulating substrate. '013 Patent, 3:3-7. As a result, a load cannot be applied sufficiently on the terminal section, and inadequate wire bonding tends to occur,

resulting in electrical connection failure between the semiconductor chip and the terminal section. '013 Patent, 3:7-12.

91. These problems are addressed in the '013 Patent. The '013 Patent describes a wiring substrate that "includes a terminal section, provided on a first surface of an insulating substrate, for wire or flip-chip bondings; a land section, provided on the insulating substrate, for an external terminal; wiring patterns, respectively provided on the first surface and a second surface on the other side of the first surface, for making electrical connection between the terminal section and the land section; and a support pattern, provided on the second surface corresponding in position to the terminal section, for improving bondings. The wiring substrate can relieve connection failure in bondings." '013 Patent, Abstract.

92. The '013 Patent addresses the problems identified in existing semiconductor chip arrangements by, among other steps, adding "an insulating substrate, a terminal section for wire bonding or flip-chip connection and a support pattern, provided on a surface of the other side of the surface where the terminal section is provided, and on a position corresponding to the terminal section." '013 Patent, 3:65-4:5.

Direct Infringement

93. Defendants, without authorization or license from Plaintiff, have directly infringed the '013 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), designing, manufacturing, importing, distributing, selling, and offering for

sale memories and other electronic hardware, devices, and products that are made by a method that infringes one or more claims of the ’013 Patent. Defendants have further provided services that practice methods that infringe one or more claims of the ’013 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271.

94. Exemplary infringing products include Micron’s MT29F768G08EEHBBJ4 32L 3D NAND Flash memory, as well as similar Micron products employing the ’013 Patent, as well as consumer products that incorporate the infringing Micron memories, including but not limited to smartphones, computers, laptops, and other electronic devices, hereinafter “’013 Accused Products.”

95. Plaintiff names this exemplary infringing instrumentality to serve as notice of Defendants’ infringing acts, but Plaintiff reserves the right to name additional infringing products, known to or learned by Plaintiff or revealed during discovery, and include them more specifically in the definition of ’013 Accused Products.

96. As a specific, nonlimiting example, Defendants are liable for direct infringement pursuant to 35 U.S.C. § 271 for the manufacture, sale, offer for sale, importation, or distribution of Defendants’ MT29F768G08EEHBBJ4 32L 3D NAND Flash memory, hereinafter “’013 Exemplary Accused Product.” The ’013 Exemplary Accused Product meets all limitations of at least claim 11 of the ’013 Patent, either literally or under the doctrine of equivalents.

97. The ’013 Exemplary Accused Product is a semiconductor device comprising an insulating substrate (A); a terminal section (B), provided on a first surface of the insulating substrate (C), for making connection by wire bonding (D).

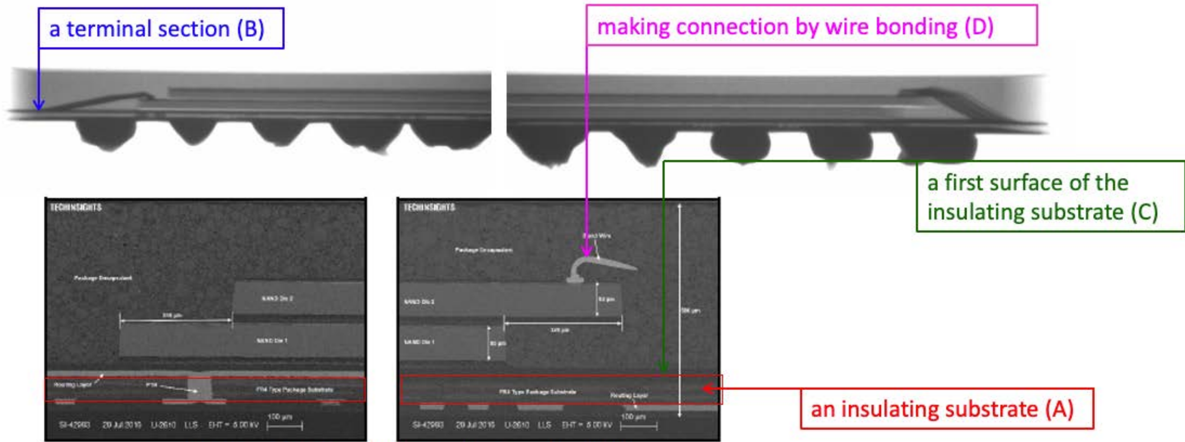

Fig 1: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

98. The semiconductor device of the ’013 Exemplary Accused Product further comprises a land section (E), provided on the insulating substrate, for an external connection terminal (F); wiring patterns (G), respectively provided on the first surface and a second surface on the other side of the first surface (H).

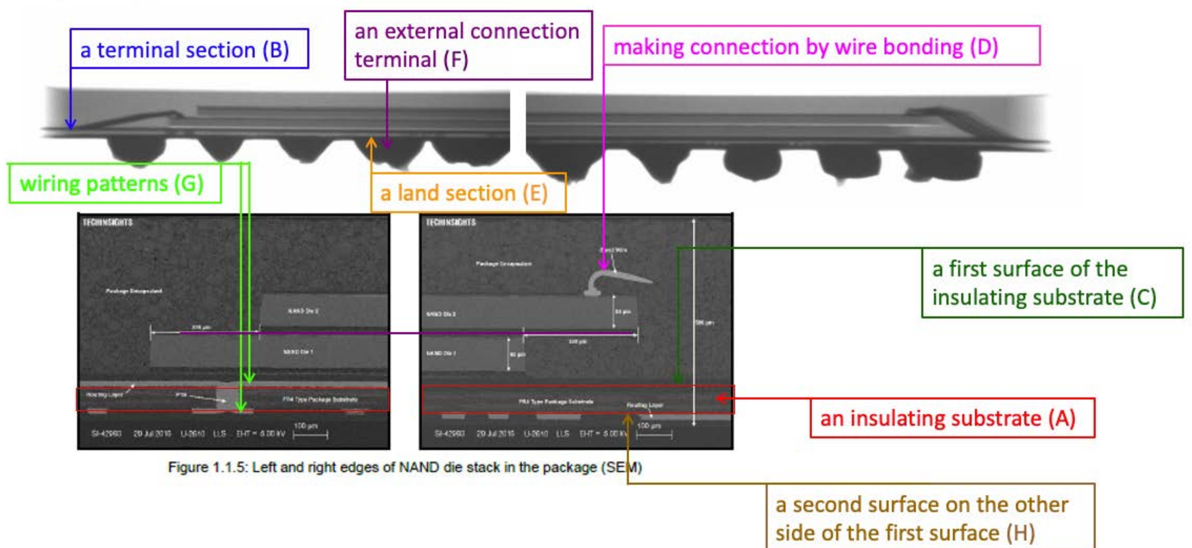

Fig 2: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

99. The semiconductor device of the ’013 Exemplary Accused Product further comprises wiring patterns (G), respectively provided on the first surface and a second surface on the other side of the first surface (H), for making electrical connection between the terminal section and the land section (l).

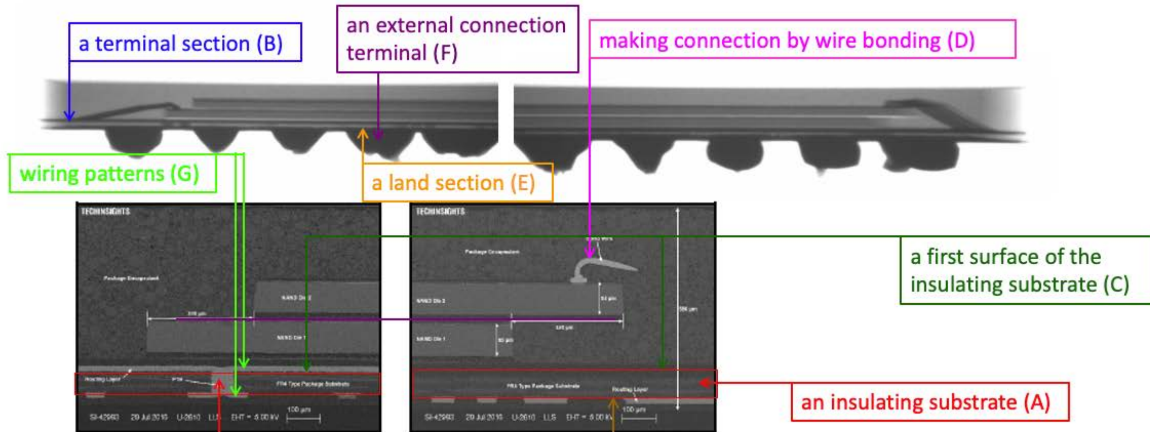

Fig 3: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

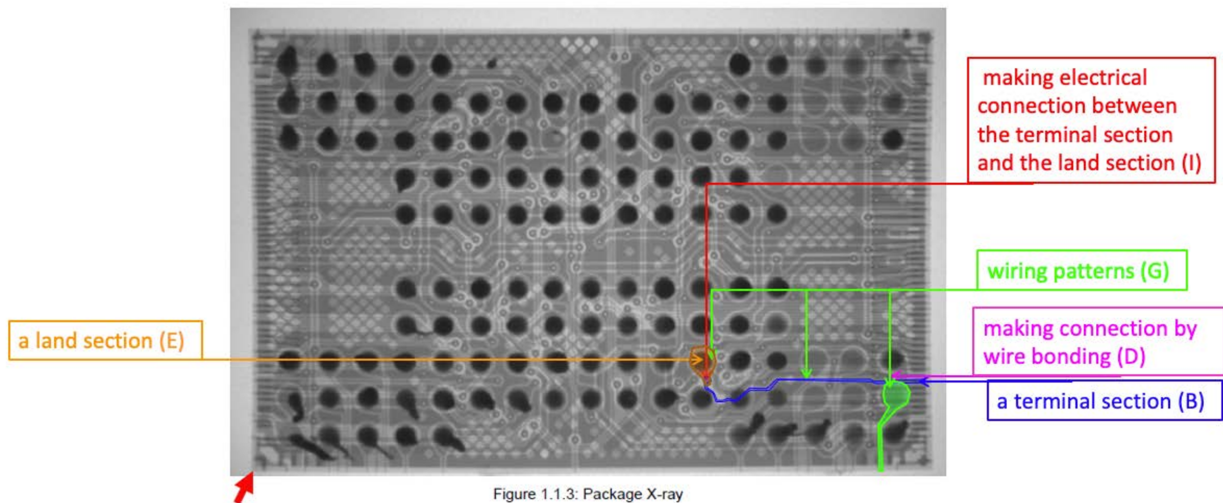

Fig 4: Planview X-ray image of the Package

100. The semiconductor device of the ’013 Exemplary Accused Product further comprises a support pattern (J), provided on the second surface corresponding in position to the terminal section, for improving wire bonding connection, wherein

the support pattern is not electrically connected to one of the terminal section and land section (K).

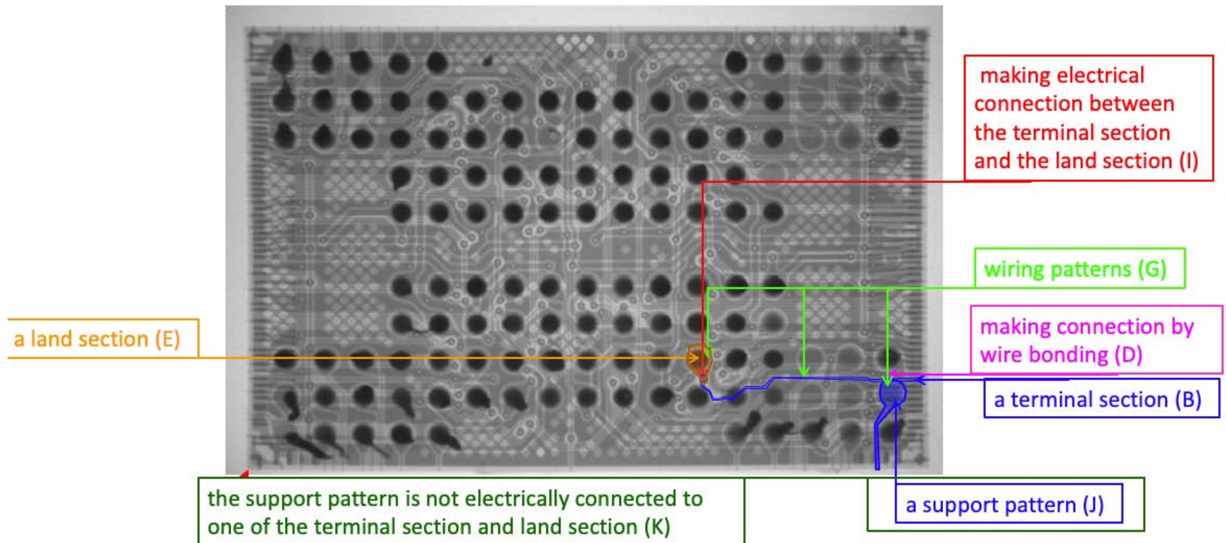

Fig 5: Planview X-ray image of the Package

101. The semiconductor device of the '013 Exemplary Accused Product further comprises a semiconductor chip (L) mounted on the insulating substrate.

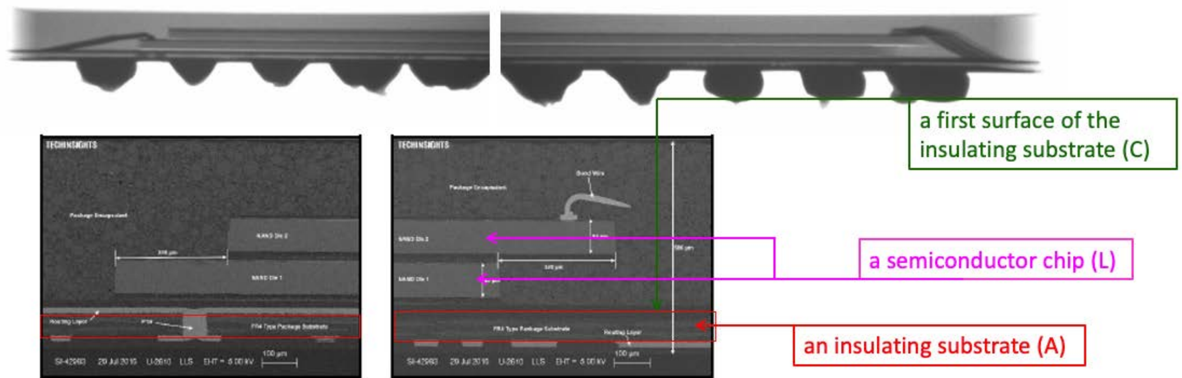

Figure 1.1.5: Left and right edges of NAND die stack in the package (SEM)

Fig 6: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

102. The semiconductor device of the '013 Exemplary Accused Product further comprises a bonding wire section (M) for making electrical connection between the terminal section and the semiconductor chip.

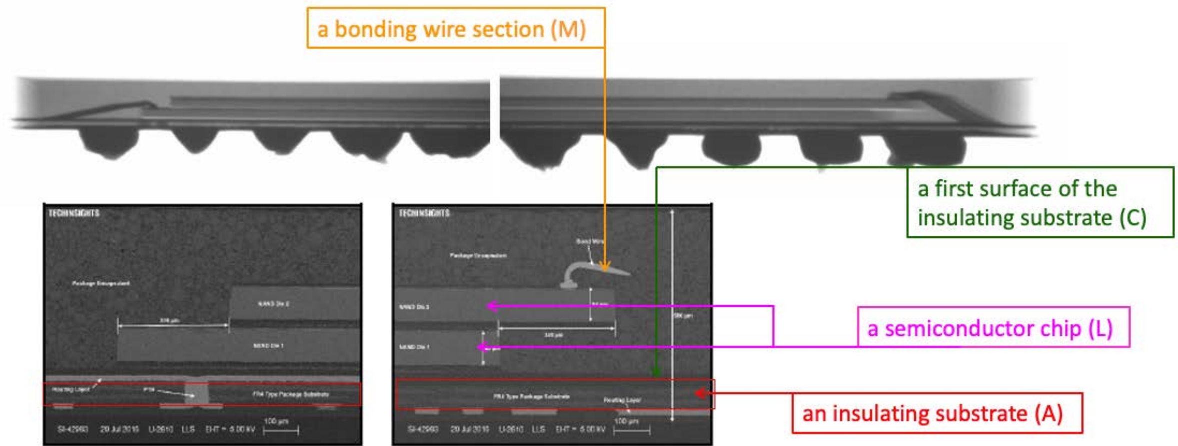

Fig 7: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

103. The semiconductor device of the '013 Exemplary Accused Product further comprises a resin sealing section (N) for sealing a circuit forming surface of the semiconductor chip (O) and the bonding wire section.

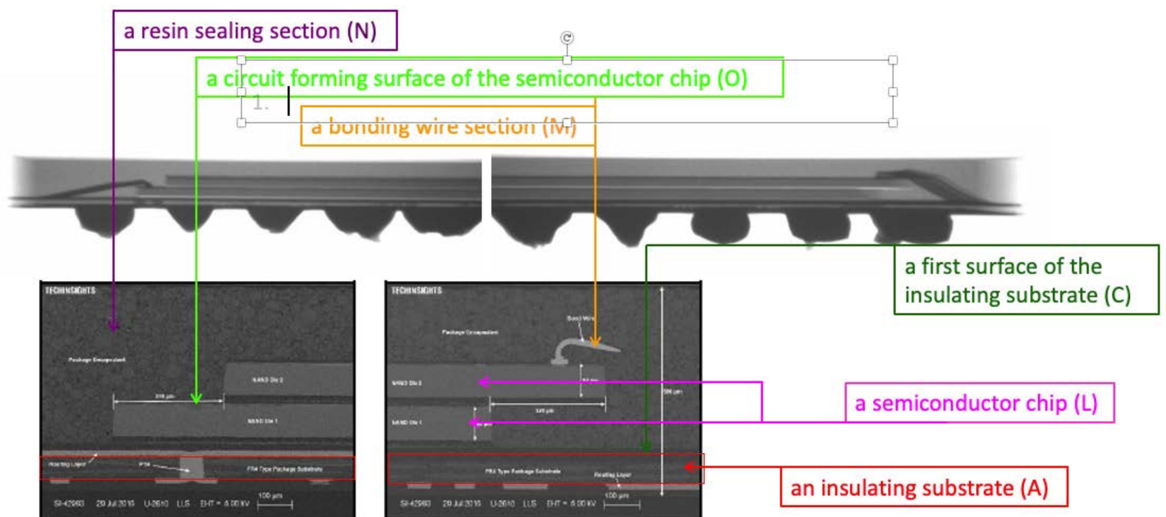

Fig 8: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

104. The semiconductor device of the ’013 Exemplary Accused Product further comprises a conductive member (P) provided on the land section, for connecting the semiconductor chip to outside.

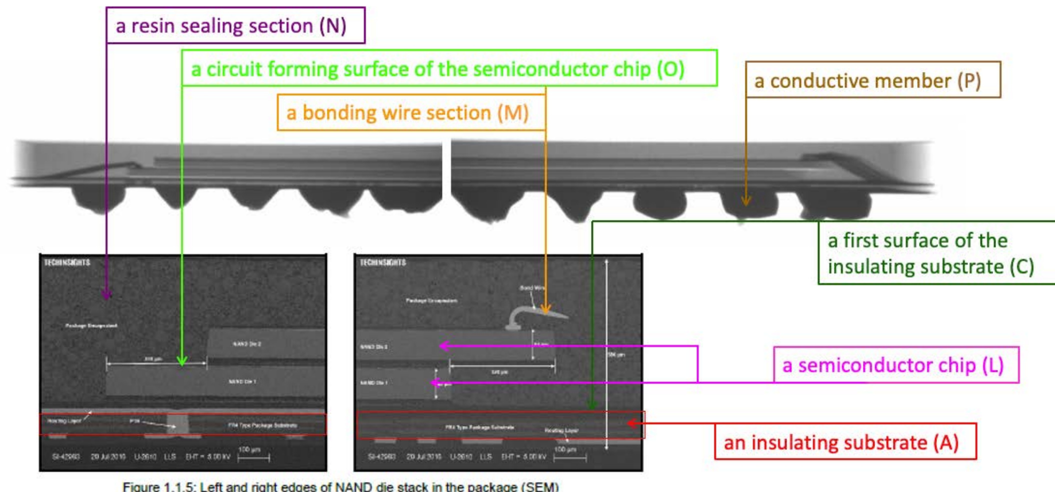

Fig 9: Sideview Package X-ray image (upper) and Cross-Sectional SEM Image of the Package(Lower)

Willful Infringement

105. Defendants have had actual knowledge of the ’013 Patent and its infringement thereof at least as of receipt of Plaintiff’s notice letter dated September 18, 2018.

106. Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Asserted Patents.

107. Defendants have been issued over 8,000 patents held in the name of the Defendant or a related entity, many of which are patents prosecuted in the USPTO in the same technology area as the ’013 Patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances

and extent of Defendants obtaining actual knowledge of the ’013 Patent prior to the commencement of this lawsuit will be confirmed during discovery.

108. Defendants’ infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendants.

109. Notwithstanding this knowledge, Defendants knowingly or with reckless disregard infringed the ’013 Patent. Defendants continued to commit acts of infringement despite being on notice of an objectively high likelihood that its actions constituted infringement of Plaintiff’s valid patent rights, either literally or equivalently.

110. Defendants are therefore liable for willful infringement and Plaintiff accordingly seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect, Induced, and Contributory Infringement

111. Defendants, directly and/or through its subsidiaries, affiliates, agents, and/or business partners, committed acts of indirect infringement of at least one claim of the ’002 Patent, pursuant to 35 U.S.C. §§ 271(b) and (c), by actively inducing or contributing to the acts of direct infringement performed by others in the United States, the State of Texas, and the Western District of Texas.

112. Defendants induced through affirmative acts their distributors, manufacturers, testers, customers, and/or end users, such as designers of Defendants’ chips and end users of Defendant’s chips to directly infringe the ’013 Patent by making, using, selling, and/or importing the Accused Products, with the specific

intent to induce acts constituting infringement, and knowing that the induced acts constituted patent infringement, either literally or equivalently.

113. Defendants knowingly contributed to direct infringement by their customers through affirmative acts and by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the ’013 Accused Products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

114. The affirmative acts of inducement by Defendants have included, but are not limited to, any one or a combination of: (i) designing infringing chips for manufacture according to specification; (ii) collaborating on and/or funding the development of the infringing chips and/or technology; (iii) soliciting and sourcing the manufacture of infringing chips; (iv) licensing and transferring technology and know-how to enable the manufacture of infringing chips; (v) enabling and encouraging the use, sale, or importation of infringing chips; enabling and encouraging the use, sale, or importation of infringing chip by its customers; (vi) advertising the infringing chips and/or technology; and (vii) providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, product specifications, user manuals, marketing materials, and instructions.

115. Defendants contributed to the direct infringement of the ’013 Patent by their customers and other third parties; and Defendants, their customers, and other third parties directly infringed.

116. Defendants imported, exported, made and/or sold parts, components, or intermediate products to customers and third parties that, once assembled, infringed the ’013 Patent by the sale and/or use of the assembled memories and/or devices.

117. Defendants made, used, sold, and/or offered to sell infringing semiconductor devices and/or memory products, which are especially made to design and specification, and are not staple products or commodities with substantial non-infringing use.

118. Defendants knew that the induced conduct would constitute infringement and intended that infringement at the time of committing the aforementioned acts, such that the acts and conduct were committed with the specific intent to induce infringement, or deliberately avoiding learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

119. As a result of Defendants’ infringement, Plaintiff has suffered monetary damages and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 US.C. § 284.

120. Plaintiff has incurred substantial damages, including monetary damages.

121. Therefore, Plaintiff is entitled to actual and/or compensatory damages, reasonable royalties, pre-judgment and post-judgment interest, enhanced damages, and costs.

V. NOTICE

122. Plaintiff has complied with the notice requirement of 35 U.S.C. § 287 and has not distributed, sold, offered for sale, or made products embodying the Asserted Patents. This notice requirement has been complied with by all relevant persons at all relevant times.

123. Defendants have had actual knowledge of the Asserted Patents and their infringement thereof at least as of receipt of Plaintiff's notice letters dated August 22, 2018 and September 18, 2018.

VI. JURY DEMAND

124. Plaintiff demands a trial by jury of all matters to which it is entitled to trial by jury, pursuant to FED. R. CIV. P. 38.

VII. PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief against Defendants as follows:

A. That the Court determine that one or more claims of the '806 Patent has been infringed by Defendants, literally and/or under the doctrine of equivalents;

B. That the Court determine that one or more claims of the '879 Patent has been infringed by Defendants, literally and/or under the doctrine of equivalents;

C. That the Court determine that one or more claims of the '013 Patent has been infringed by Defendants, literally and/or under the doctrine of equivalents;

D. That the Court determine that one or more claims of the '806 Patent has been indirectly infringed by Defendants;

E. That the Court determine that one or more claims of the '879 Patent has been indirectly infringed by Defendants;

F. That the Court determine that one or more claims of the ’013 Patent has been indirectly infringed by Defendants;

G. That the Court award damages adequate to compensate Plaintiff for the patent infringement that has occurred, together with prejudgment and post-judgment interest and costs;

H. That the Court find this case to be exceptional pursuant to 35 U.S.C. § 285;

I. That the Court determine that Defendants’ infringements were willful;

J. That the Court award enhanced damages against Defendants pursuant to 35 U.S.C. § 284;

K. That the Court award Plaintiff reasonable attorneys’ fees; and

L. That the Court award such other relief to Plaintiff as the Court deems just and proper.

VIII. RESERVATION OF RIGHTS

Plaintiff’s investigation is ongoing, and certain material information remains in the sole possession of Defendants or third parties, which will be obtained via discovery herein. Plaintiff expressly reserves the right to amend or supplement the causes of action set forth herein in accordance with FED. R. CIV. P. 15.

Dated: March 4, 2022

Respectfully submitted,

/s/ Scott W. Breedlove

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