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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
SOUTHERN DIVISION

MEMORY TECHNOLOGIES, LLC, a Nevada company,

Plaintiff,

vs.

SANDISK LLC, a Delaware company, WESTERN DIGITAL CORPORATION, a Delaware company, WESTERN DIGITAL TECHNOLOGIES, INC., a Delaware company,

Defendants.

Case No. 8:16-cv-2163

COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

Plaintiff Memory Technologies, LLC ("MTL") hereby alleges for its Complaint for patent infringement against SanDisk LLC, Western Digital Corporation, and Western Digital Technologies, Inc. (collectively "Defendants") on personal knowledge as to its own actions and on information and belief as to the actions of others, as follows:

THE PARTIES

1. MTL is organized in Nevada and has its headquarters at 6787 W Tropicana Ave., Suite 238, Las Vegas, NV 89103. MTL is a subsidiary of Pendrell Corporation. MTL owns a worldwide patent portfolio that covers numerous memory technologies. As many as 81 of MTL's patents belong to patent families containing patents essential to various memory and electronic storage standards, including the JEDEC eMMC standard[1] and SD Standard.[2] In the past three years, MTL has licensed the Asserted Patents to the major flash memory manufacturers in the world.

2. On information and belief, SanDisk LLC ("SanDisk") is organized under the laws of the State of Delaware, with its principal place of business at 951 SanDisk Dr., Milpitas, CA 95035. On information and belief, SanDisk LLC is a wholly owned subsidiary of Western Digital Corporation, which is also incorporated under the laws of the State of Delaware. On information and belief, SanDisk Corporation converted to SanDisk LLC this year, and references herein to "SanDisk" refer to the acts of both SanDisk LLC and its predecessor in interest, SanDisk Corporation. On information and belief, SanDisk is in the business of designing, developing, manufacturing, making, offering for sale, selling, using, selling in the United States after importation, selling for importation, and/or importing into the United States certain flash memory devices or their components, including certain SD Cards, microSD Cards, and eMMC memory.

[1] The JEDEC eMMC standard refers to the JEDEC Embedded MultiMediaCard (e.MMC) e.MMC/Card Product Standard (JESD84-A441) or higher. MTL will use "eMMC" to refer to e.MMC as governed by the JEDEC e.MMC Standard in this complaint.

[2] The SD Standard refers to the Secure Digital Association Physical Layer Specification ("SD Standard").

3. On information and belief, Western Digital Corporation is incorporated under the laws of the State of Delaware, with its principal place of business at 3355 Michelson Drive, Suite 100, Irvine, CA 92612. On information and belief, as of May 12, 2016, SanDisk became an indirect, wholly owned subsidiary of Western Digital Corporation. On information and belief, SanDisk is now a "Western digital brand," and Western Digital Corporation or its affiliates are identified as holding the copyright on SanDisk's website. *See* https://www.sandisk.com/.

4. On information and belief, Western Digital Technologies, Inc. is incorporated under the laws of the State of Delaware, with its principal place of business at 951 SanDisk Drive, Milpitas, CA 95035. On information and belief, Western Digital Technologies, Inc. is a wholly owned subsidiary of Western Digital Corporation, and SanDisk is a wholly owned subsidiary of Western Digital Technologies, Inc. On information and belief, Western Digital Technologies, Inc. is also the seller of record and licensee in the Americas of SanDisk products. *See* https://www.sandisk.com/. SanDisk also identifies Western Digital Technologies, Inc.'s headquarters in Milpitas, California, as SanDisk's headquarters. *See* https://www.sandisk.com/about/contact/locations.

5. This is a patent infringement action by MTL to end Defendants' unauthorized, willful, and infringing manufacture, use, sale, offering to sell, and/or importing in the United States of products and components that incorporate MTL's patented inventions, and to end Defendants' active inducement of infringement by others in the United States of MTL's patented inventions.

6. MTL is the owner of the patents at issue in this action: U.S. Patent Nos. RE45,486 ("the 486 Patent"); RE45,542 ("the 542 Patent"): 9,063,850 ("the 850 Patent"); 8,307,180 ("the 180 Patent"); and 7,565,469 ("the 469 Patent"), 7,275,186 ("the 186 Patent"); 7,827,370 ("the 370 Patent"); and 7,739,487 ("the 487 Patent") (collectively, the "Asserted Patents").

7. MTL holds all substantial rights and interest in the Asserted Patents, as described below, including the exclusive right to sue Defendants for infringement and recover damages.

8. Defendants make, use, sell, offer to sell, and/or import in the United States systems and components of systems that infringe one or more claims of the Asserted Patents, and actively induce infringement by others of the same. MTL seeks monetary damages and prejudgment interest for Defendants' past and ongoing direct and indirect infringement of the Asserted Patents.

JURISDICTION AND VENUE

9. This civil action for patent infringement arises under the patent laws of the United States, 35 U.S.C. § 100 et seq., including in particular under 35 U.S.C. § 271. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

10. This Court has personal jurisdiction over Western Digital Corporation. Western Digital Corporation has systematic and continuous contacts with the forum, including because it conducts substantial business and is headquartered in California and this District at 3355 Michelson Drive, Suite 100, Irvine, CA 92612.

11. This Court has personal jurisdiction over Western Digital Technologies, Inc. Western Digital Technologies, Inc. has systematic and continuous contacts with the forum, including because, like its parent Western Digital Corporation, it conducts substantial business in California and this District and is headquartered in California.

12. This Court has personal jurisdiction over SanDisk. SanDisk has systematic and continuous contacts with the forum, including because, like its parent Western Digital Corporation, it conducts substantial business in California and this District and is headquartered in California.

13. Venue is proper in the Central District of California under 28 U.S.C. §§ 1391 and 1400(b), because Defendants do business in the district, have committed acts of infringement in the district, and because a substantial part of the events giving rise to MTL's claims against Defendants occurred and continue to occur in this District.

14. On information and belief, both Western Digital Corporation and Western Digital Technologies, Inc. (collectively "Western Digital") conduct substantial business in this District. Western Digital makes, uses, sells, offers to sell, and/or imports, within this District, systems and components that infringe one or more of the Asserted Patents, and induces infringement by others within this District. Western Digital derives substantial revenue from the sale of infringing systems and components within the District, and/or expects or should reasonably expect its actions to have consequences within the District. Western Digital has committed and continues to commit acts of patent infringement in this District, including making, using, selling, offering to sell, and/or importing infringing systems and components within the District, and inducing infringement by others in this District, including by and through these activities described above that were and are undertaken in concert with SanDisk.

15. Moreover, on information and belief, Western Digital Corporation is headquartered at 3355 Michelson Drive, Suite 100, Irvine, CA 92612. Western Digital has established a significant presence in this forum by manufacturing, using, selling, offering to sell, and importing in this District SanDisk SD cards, SanDisk microSD cards, SanDisk eMMC memory, and/or products containing SanDisk eMMC memory that infringe one or more Asserted Patents in this action, or inducing such acts. For example, Western Digital offered a 32GB SanDisk SD Card with purchase of its My Passport Wireless Product. Additionally, Western Digital directly sells 32 GB SanDisk Extreme Pro SD UHS-I Cards on its website.

16. Additionally, on information and belief, according to publicly available documentation, Western Digital's principal marketing, sales, and customer service decisions are made at Western Digital's headquarters within this District. Furthermore, Western Digital's finance and accounting departments, as well as its legal and executive offices are located at its headquarters within this District. On information and belief, because Western Digital Corporation's headquarters are located within this District, Western Digital and SanDisk meet within this District at Western Digital Corporation's

headquarters to discuss and make decisions regarding matters pertaining to the Accused Products, including but not limited to marketing, sales, and customer services of the Accused Products. Additionally, on information and belief, Western Digital induces others, including SanDisk and other third-parties, to infringe the Asserted Patents within this District, through, among other of its operations, its marketing, sales, and customer service operations. On information and belief, Western Digital and SanDisk jointly induce others to infringe the Asserted Patents from within this District through marketing, sales, and customer service operations.

17. SanDisk also makes, uses, sells, offers to sell, and/or imports its systems and components, including systems and components that infringe the Asserted Patents, and induces infringement by others within this District. SanDisk derives substantial revenue from the sale of such systems and components that are distributed within the District, and/or expects or should reasonably expect its actions to have consequences within the District. SanDisk has committed and continues to commit acts of patent infringement, including making, using, selling, offering to sell, and/or importing within this District systems and/or components that infringe one or more of the Asserted Patents, and inducing infringement by others in this District. SanDisk and Western Digital also act in partnership and/or in concert to make, sell, offer to sell, and import SanDisk and Western Digital co-branded products in this District that infringe one or more Asserted Patents. SanDisk has established a significant presence in this forum by manufacturing, using, selling, offering to sell, and importing into this District SD Cards, microSD Cards, eMMC memory, and/or products containing eMMC memory that infringe one or more Asserted Patents in this action.

THE ASSERTED PATENTS

18. On June 2, 2015, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. RE45,542 ("the 542 Patent"), entitled "Method and a System for Determining the Power Consumption in Connection with an Electronic

Device, and an Electronic Device." A copy of the 542 Patent is attached hereto as Exhibit 1.

19. MTL owns all substantial right, title, and interest in the 542 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

20. On April 21, 2015, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. RE45,486 ("the 486 Patent"), entitled "Method for Addressing a Memory Card, a System Using a Memory Card, and a Memory Card." A copy of the 486 Patent is attached hereto as Exhibit 2.

21. MTL owns all substantial right, title, and interest in the 486 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

22. On July 21, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,565,469 ("the 469 Patent"), entitled "Multimedia Card Interface Method, Computer Program Product and Apparatus." A copy of the 469 Patent is attached hereto as Exhibit 3.

23. MTL owns all substantial right, title, and interest in the 469 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

24. On June 23, 2015, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,063,850 ("the 850 Patent"), entitled "Extended Utilization Area for a Memory Device." A copy of the 850 Patent is attached hereto as Exhibit 4.

25. MTL owns all substantial right, title, and interest in the 850 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

26. On November 6, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,307,180 ("the 180 Patent"), entitled "Extended

Utilization Area for a Memory Device." A copy of the 180 Patent is attached hereto as Exhibit 5.

27. MTL owns all substantial right, title, and interest in the 180 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

28. On September 25, 2007, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,275,186 ("the 186 Patent"), entitled "Memory Bus Checking Procedure" A copy of the 186 Patent is attached hereto as Exhibit 6.

29. MTL owns all substantial right, title, and interest in the 186 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

30. On November 2, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,827,370 ("the 370 Patent"), entitled "Partial Permanent Write Protection of a Memory Card and Partially Permanently Write Protected Memory Card." A copy of the 370 Patent is attached hereto as Exhibit 7.

31. MTL owns all substantial right, title, and interest in the 370 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

32. On June 15, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,739,487 ("the 487 Patent"), entitled "Method for Booting a Host Device From an MMC/SD Device, a Host Device Bootable from an MMC/SD Device and an MMC/SD Device Method a Host Device May Booted From." A copy of the 487 Patent is attached hereto as Exhibit 8.

33. MTL owns all substantial right, title, and interest in the 487 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

34. As early as October 23, 2013, SanDisk was on notice of the Asserted Patents through discussions with MTL about the Asserted Patents or related patents. SanDisk was

further aware of the Asserted Patents and their applicability to SanDisk's products because SanDisk's memory joint-venture partner, Toshiba, took a license to the Asserted Patents in 2016. SanDisk is also aware that other of its competitors have taken licenses to the Asserted Patents for products that practice the same standards as the SanDisk memory products accused in this Complaint. SanDisk is on notice that its actions constituted and continue to constitute infringement of one or more claims of the Asserted Patents.

35. On information and belief, Western Digital was on notice of the Asserted Patents and that its actions constituted and continue to constitute infringement of the Asserted Patents as early as its acquisition of SanDisk and/or it entered discussions with MTL.

36. SanDisk was a founding member of the organization responsible for the SD Standard. *See* https://www.sdcard.org/about_sda/index.html. SanDisk was also a member of the organization responsible for the JEDEC eMMC Standard. *See* https://web.archive.org/web/20110505093640/http://www.jedec.org/about-jedec/member-list. On information and belief, SanDisk was also on notice of the Asserted Patents and that its actions constituted and continue to constitute infringement of the Asserted Patents as early as those inventions were declared essential to the SD and/or the eMMC Standards.

COUNT I:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. RE45,542

37. MTL incorporates and realleges paragraphs 1 - 36 above as if fully set forth herein.

38. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 542 Patent, including but not limited to Claim 38, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority SD and MicroSD Cards compliant with SD Specification Version 3.00 or higher with

maximum current consumption greater than 200 mA, as well as Embedded Multimedia Card ("eMMC") memory, including eMMC memory within Embedded Multichip Packages ("e.MCP" or "eMCP"), compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher (these SD Cards, microSD Cards, and eMMC memory are, collectively, the "542 Patent Accused Products"). The 542 Patent Accused Products include, for example and without limitation, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46), the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A), and iNAND 7232.

39. By way of example, on information and belief, each of the SD or microSD Cards that are 542 Patent Accused Product is a peripheral device comprising a memory storing a default value for power consumption (for example, 200mA) and a limiting value for power consumption (for example, 400mA, 600mA, and 800mA) of the peripheral device, and a connector configured to connect the peripheral device to an electronic device for supplying power to the peripheral device (for example, the power lines V_{SS1}, V_{DD}, V_{SS2} of the SD card interface). *See* SD Specifications, Part 1, Physical Layer Specification, Version 3.00 (April 16, 2009), *available at* forums.parallax.com/discussion/download/100220&d= at 14, 51 ("SD Specification 3.00"). On information and belief, the maximum power consumption of the peripheral device is set at a startup stage to the default value (for example, power consumption is set to 200mA after initialization), and the limiting value, which is higher than the default value, is defined for the power consumption of the peripheral device (for example, 400mA, 600mA, and 800mA). *Id.* at 51. On information and belief, each peripheral device also comprises a processor (for example, a controller) operable to set the maximum power consumption of the peripheral device to a value in the range from the default value to the limiting value—including the default and limiting value (for example, 200mA to 800mA). *Id.* at 15, 51. On information and belief, each peripheral device is configured to receive information from the electronic device for setting the maximum power consumption of the peripheral device (for example, Switch Function Command,

CMD6, defines the current limit), and the processor operable to set the maximum power consumption is configured to obtain the value—as indicated by the received information—and to set the maximum power consumption of the peripheral device to the value (for example, a switch in power consumption occurs within 8 clocks after the end bit of status data). *Id.* at 48, 51, 60, 78.

40. As another example, on information and belief, each eMMC memory that is a 542 Patent Accused Product is a peripheral device comprising a memory storing a default value for power consumption (for example, 200 mA max peak current) and a limiting value for power consumption (for example, max peak currents of 220 mA to 550 mA) of the peripheral device, and a connector configured to connect the peripheral device to an electronic device for supplying power to the peripheral device (for example, the power supply connector pins VCC and VCCQ on the eMMC interface). *See* JEDEC Embedded MultiMediaCard (e.MMC) e.MMC/Card Product Standard, (MMCA, 4.41), JESD84-A441 (March 2010) at 15, 50, 127, 138 ("JEDEC eMMC 4.41"). On information and belief, the maximum power consumption of the peripheral device is set at a startup stage to the default value (for example, power consumption is set to 200 mA max peak current after power-on or a software reset), and the limiting value, which is higher than the default value, is defined for the power consumption of the peripheral device (for example, max peak currents of 220 mA up to 550 mA). *Id.* at 50, 138. On information and belief, each peripheral device also comprises a processor (for example, a card interface controller) operable to set the maximum power consumption of the peripheral device to a value in the range from the default value to the limiting value—including the default and limiting value (for example, 200 mA to 550 mA max peak currents). *Id.* at 16, 138, 141. On information and belief, each peripheral device is configured to receive information from the electronic device for setting the maximum power consumption of the peripheral device (for example, SWITCH Command, CMD6), and the processor operable to set the maximum power consumption is configured to obtain the value—as indicated by the received information—and to set the maximum power consumption of

the peripheral device to the value (for example, a SWITCH command changes the power class by changing registers). *Id.* at 50, 87, 138, 141.

41. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 542 Patent, including but not limited to Claim 38, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 542 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 542 Patent by such third parties. Defendants' acts of inducement include: providing the 542 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 542 Patent Accused Products; advertising the 542 Patent Accused Products in the United States and encourages the sale and offer for sale of the 542 Patent Accused Products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased (for example, https://www.sandisk.com/home; https://www.sandisk.com/oem-design/mobile/inand; https://www.sandisk.com/about/where-to-buy; https://www.sandisk.com/home/memory-cards/sd-cards/extremepro-sd-uhs-i; https://www.sandisk.com/home/memory-cards/microsd-cards/extremeplus-microsd); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 542 Patent Accused Products for purposes of technical assistance, design, replacement, sales, and marketing of the 542 Patent Accused Products (for example, http://kb.sandisk.com/ and links therein; https://www.sandisk.com/oem-design/mobile/inand; https://pct1.sandisk.com/NewSearch.aspx; https://link.sandisk.com/welcome.html).

42. Defendants proceeded in this manner despite knowledge of the 542 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 542 Patent. The

Defendants had knowledge of the 542 Patent and the infringement of the 542 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 542 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

43. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 542 Patent.

44. Defendants' infringement of the 542 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 542 Patent and the infringement of the 542 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 542 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT II:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. RE45,486

45. MTL incorporates and realleges paragraphs 1 - 44 above as if fully set forth herein.

46. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 486 Patent, including but not limited to Claims 6, 9-11, 22, 23, 26, and 27 pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority High Capacity (HC) and Extended Capacity (XC) microSD and SD Cards compliant with SD Specification Version 2.00 or higher, as well as eMMC memory, including eMMC memory within eMCP, that is compliant with the JEDEC

eMMC 4.41 (JESD84-A441) standard or higher (these SD Cards, microSD Cards, and eMMC memory devices are, collectively, the "486 Patent Accused Products"). The 486 Patent Accused Products include, for example and without limitation, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46), the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A), and iNAND 7232.

47. By way of example, on information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card comprising several memory locations for storing data (for example, physical areas on the memory to store one byte), the memory card stores at least one parameter (for example, the C_SIZE parameter is stored in the CSD register), and the memory card is configured so that the number of memory locations of the memory card can be calculated on the basis of the at least one parameter (for example, memory capacity = (C_SIZE + 1) * 512K byte). *See* SD Specifications, Part 1, Physical Layer Simplified Specification, Version 2.00 (Sep. 25, 2006), *available at* http://users.ece.utexas.edu/~valvano/EE345M/SD_Physical_Layer_Spec.pdf at 73, 86-87 ("SD Specification 2.00"). On information and belief, each memory card is configured so that a specific number of bits is reserved for said at least one parameter (for example, 22 bits are reserved in the CSD Register for the C_SIZE parameter) and is configured to have stored therein an addressing data (for example, the value of Bit 30 of the OCR register) that is indicative of at least one addressing method supported (for example, block address format or byte address format). *Id.* at 41, 74. On information and belief, the addressing data indicates either a basic addressing method (for example, if Bit 30 is 0, the memory card is a Standard Capacity SD Memory Card and uses byte address format) or an expanded addressing method (for example, if Bit 30 is 1, the memory card is High Capacity SD Memory Card and uses block address format), and the expanded addressing method enables the addressing of data in a larger number of memory locations than the basic addressing method (for example, in block address format in High Capacity SD Memory Cards the data is addressed in block units of 512 bytes and in byte address

format in Standard Capacity SD Memory Cards the data is addressed in byte units). *Id.* at 41, 50-51, 74.

48. Moreover, on information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card wherein data is arranged to be stored and read in the memory card block-by-block (for example, single or multiple block read or write). *Id.* at 18.

49. Additionally, on information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card wherein the memory locations of one block are arranged to be addressed with one address (for example, block address format). *Id.* at 41.

50. On information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card wherein the basic addressing method supports addressing only one memory location with one address (for example, byte address format). *Id.* at 41.

51. Moreover, on information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card wherein the expanded addressing method supports a higher memory capacity than the basic addressing method (for example, High Capacity compared to Standard Capacity SD or microSD Cards). *Id.* at 41.

52. Additionally, on information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card that further comprises a register for storing the addressing data (for example, the OCR Register). *Id.* at 74.

53. On information and belief, each SD or microSD Card that is a 486 Patent Accused Product is a memory card wherein the stored addressing data comprises one bit (for example, Bit 30 of the OCR Register). *Id.*

54. As another example, on information and belief, each eMMC memory device that is a 486 Patent Accused Product is a memory card comprising several memory locations for storing data (for example, physical areas on the memory to store one byte), the memory card stores at least one parameter (for example, the SEC_COUNT parameter

is stored in the Extended CSD register), and the memory card is configured so that the number of memory locations of the memory card can be calculated on the basis of the at least one parameter (for example, device density = (SEC_COUNT) x 512B). *See* JEDEC eMMC 4.41 at 24, 113, 126, 136. On information and belief, each memory card is configured so that a specific number of bits is reserved for said at least one parameter (for example, bytes [215:212] of the Extended CSD Register are reserved for the SEC_COUNT parameter) and is configured to have stored therein an addressing data (for example, the OCR register bits [30:29] store values indicate the Access Mode) that is indicative of at least one addressing method supported (for example, byte mode or sector mode). *Id.* at 44, 113, 126. On information and belief, the addressing data indicates either a basic addressing method (for example, 00b indicates byte access mode) or an expanded addressing method (10b indicates sector access mode), and the expanded addressing method enables the addressing of data in a larger number of memory locations than the basic addressing method (for example, in sector access mode the minimum addressable unit is 512 bytes and in byte access mode the minimum addressable unit is one byte). *Id.* at 14, 44, 113, 119, 126.

55. Moreover, on information and belief, each eMMC memory device that is a 486 Patent Accused Product is a memory card wherein the memory card is a memory card according to the MultiMediaCard specifications. *See generally id.*

56. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 486 Patent, including but not limited to Claim 6, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 486 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 486 Patent by such third parties. Defendants' acts of inducement include: providing the 486 Patent Accused Products or

components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 486 Patent Accused Products; advertising the 486 Patent Accused Products in the United States and encourages the sale and offer for sale of the 486 Patent Accused Products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased (for example, https://www.sandisk.com/home; https://www.sandisk.com/oem-design/mobile/inand; https://www.sandisk.com/about/where-to-buy; https://www.sandisk.com/home/memory-cards/sd-cards/extremepro-sd-uhs-i; https://www.sandisk.com/home/memory-cards/microsd-cards/extremeplus-microsd); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 486 Patent Accused Products for purposes of technical assistance, design, replacement, sales, and marketing of the 486 Patent Accused Products (for example, http://kb.sandisk.com/ and links therein; https://www.sandisk.com/oem-design/mobile/inand; https://pct1.sandisk.com/NewSearch.aspx; https://link.sandisk.com/welcome.html).

57. Defendants proceeded in this manner despite knowledge of the 486 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 486 Patent. The Defendants had knowledge of the 486 Patent and the infringement of the 486 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 486 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

58. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 486 Patent.

59. Defendants' infringement of the 486 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 486 Patent and the infringement of the 486 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 486 Patent with full knowledge

of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT III:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 7,565,469

60. MTL incorporates and realleges paragraphs 1 - 59 above as if fully set forth herein.

61. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 469 Patent, including but not limited to Claim 19, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority SD and MicroSD Cards compliant with SD Specification Version 3.00 or higher with CMD23 (SET_BLOCK_COUNT) functionality, as well as eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher (these SD, microSD, and eMMC memory devices are, collectively, the "469 Patent Accused Products"). The 469 Patent Accused Products include, for example and without limitation, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46), SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A), and iNAND 7232.

62. By way of example, on information and belief, each SD or microSD Card that is a 469 Patent Accused Product is a memory device comprising a bus interface configured to be coupled to a host through a bus having a data signal line (for example, the SD card nine-line bus interface is configured to be coupled to an SD Memory Card Host and has four data signal lines, DAT0-3), and the bus interface comprises a driver at the memory device coupled to a data signal line and a receiver at the memory device

coupled to a data signal line (for example, each data line is bidirectional and so each must be coupled to a driver to send data and a receiver to receive data). SD Specification 3.00 at 141; SanDisk microSD, microSDHC and microSDXC Cards OEM Product Manual, No. 80-36-03335, Revision 2.5 (Sept. 2015)at 10 ("OEM Product Manual"). On information and belief, the receiver is operable to receive information comprising a first information portion and a second information portion from the host over the data signal line (for example, a first and second data block) within a command execution (for example, within a CMD25 multiple block write operation), and the driver is operable to drive a change of state of the data signal line to the host within the command execution (for example, the SD Card is operable to drive the data signal line from HIGH to LOW, "busy," within the CMD25 command execution). SD Specification 3.00 at 11, 38, 74. On information and belief, the bus interface also comprises a controller coupled to the driver and to the receiver (for example, the card interface controller) that is operable to cause the change of state of the data signal line to have a first meaning after receiving the first information portion within the command execution and to have a second meaning different from the first meaning after receiving the second information portion within the command execution from the host over the data signal line (for example, when CMD23 is used in conjunction with CMD25, after receiving any data block other than the final data block the data signal line is held LOW for the duration of time that the buffers are busy (up to 250 ms) and the meaning of the change of state of the data signal line from HIGH to LOW is "buffer busy", and after receiving the final data block the data signal line is held LOW for the duration of time that the card is in the programming state (up to 500 ms) and the meaning of the change of state of the data signal line from HIGH to LOW is "programming busy"). SD Specification 3.00 at 11, 15, 34, 38, 67, 74, 87, 122; OEM Product Manual at 1.

63. As another example, on information and belief, each eMMC memory device that is a 469 Patent Accused Product is a memory device comprising a bus interface configured to be coupled to a host through a bus having a data signal line (for example,

the eMMC device has a bus interface with ten communication lines configured to be coupled to a MultiMediaCard Host and has eight data signal lines, DAT0:7), and the bus interface comprises a driver at the memory device coupled to a data signal line and a receiver at the memory device coupled to a data signal line (for example, each data line is bidirectional and so each must be coupled to a driver to transmit data and a receiver to receive data). *See* JEDEC eMMC 4.41 at 163. On information and belief, the receiver is operable to receive information comprising a first information portion and a second information portion from the host over the data signal line (for example, a first and second data block) within a command execution (for example, within a WRITE_MULTIPLE_BLOCK CMD25 operation), and the driver is operable to drive a change of state of the data signal line to the host within the command execution (for example, the eMMC device is operable to generate a busy signal on the data signal line within the CMD25 command execution). *Id.* at 19, 89, 163, 182. On information and belief, the bus interface also comprises a controller coupled to the driver and to the receiver (for example, the card interface controller) that is operable to cause the change of state of the data signal line to have a first meaning after receiving the first information portion within the command execution and to have a second meaning different from the first meaning after receiving the second information portion within the command execution from the host over the data signal line (for example, after receiving any data block other than the final data block the meaning of the change of state of the data signal line is "buffer busy," and after receiving the final data block the meaning of the change of state of the data signal line is "programming busy"). *Id.* at 16, 107.

64. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 469 Patent, including but not limited to Claim 19, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 469 Patent Accused Products. The making, using, offering to sell, selling, and/or

importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 469 Patent by such third parties. Defendants' acts of inducement include: providing the 469 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 469 Patent Accused Products; advertising the 469 Patent Accused Products in the United States and encourages the sale and offer for sale of the 469 Patent Accused Products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased (for example, https://www.sandisk.com/home; https://www.sandisk.com/oem-design/mobile/inand; https://www.sandisk.com/about/where-to-buy; https://www.sandisk.com/home/memory-cards/sd-cards/extremepro-sd-uhs-i; https://www.sandisk.com/home/memory-cards/microsd-cards/extremeplus-microsd); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 469 Patent Accused Products for purposes of technical assistance, design, replacement, sales, and marketing of the 469 Patent Accused Products (for example, http://kb.sandisk.com/ and links therein; https://www.sandisk.com/oem-design/mobile/inand; https://pct1.sandisk.com/NewSearch.aspx; https://link.sandisk.com/welcome.html).

65. Defendants proceeded in this manner despite knowledge of the 469 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 469 Patent. The Defendants had knowledge of the 469 Patent and the infringement of the 469 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 469 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

66. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 469 Patent.

67. Defendants' infringement of the 469 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 469 Patent and the infringement of the 469 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 469 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT IV:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 9,063,850

68. MTL incorporates and realleges paragraphs 1 - 67 above as if fully set forth herein.

69. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 850 Patent, including but not limited to Claims 10 and 13, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority SD and MicroSD Cards compliant with SD Specification Version 3.00 or higher with Speed Class Control Command Functionality, as well as eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher (these SD Cards, microSD Cards, and eMMC memory devices are, collectively, the "850 Patent Accused Products"). The 850 Patent Accused Products include, for example and without limitation, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46), SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A); and iNAND 7232.

70. By way of example, on information and belief, each SD or microSD Card that is a 850 Patent Accused Product is a memory device comprising one more predefined

access profiles (for example, Speed Class profiles Class 2, Class 4, Class 6, and Class 10) to determine how access to the memory device is configured for at least one usage of the memory device (for example, a write using a Speed Class), and a controller configured to receive at least one first command (for example, a card interface controller) to activate at least one of the one more predefined access profiles associated with the memory device (for example, Initialization Command ACMD41 activates at least one Speed Class profile by setting the XPC bit, command frame bit 36, to 1) and to receive at least one second command (for example, CMD20, the Speed Class Control Command) to configure access to the memory device in accordance with the at least one of the one more predefined access profiles such that at least a portion of the memory device is configured according to the at least one of the more or more predefined access profiles for the at least one usage (for example, CMD20 configures the Allocation Units, "AUs," which are portions of the user area of the memory device, such that the host writes sequentially in an AU according to the Speed Class Profile to ensure recording meets the minimum performance rate). SD Specification 3.00 at 7, 15, 27, 89, 93, 108-09, 113-15, 117-19.

71. As another example, on information and belief, each eMMC memory device that is a 850 Patent Accused Product is a memory device comprising one more predefined access profiles (for example, an eMMC device has up to 15 contexts and has context configuration information that may be associated with a context) to determine how access to the memory device is configured for at least one usage of the memory device (for example, a read or write), and a controller configured to receive at least one first command (for example, an eMMC Device Controller) to activate at least one of the one more predefined access profiles associated with the memory device (for example, CMD6 writes a non-zero value into bits [1:0] of a context configuration register) and to receive at least one second command (for example, CMD23) to configure access to the memory device in accordance with the at least one of the one more predefined access profiles such that at least a portion of the memory device is configured according to the at least one of the more or more predefined access profiles for the at least one usage (for example,

CMD23 with the subsequent read and/or write commands defines a portion of the memory to be configured in accordance with the designated context). JEDEC Embedded MultiMediaCard (e.MMC), Electrical Standard 4.51, JESD84-B451 (June 2012) at 7, 41, 81, 103, 105, 149, 152, 184 ("JEDEC eMMC 4.51").

72. On information and belief, the memory device comprises an embedded MultiMedia Card (eMMC) device.

73. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 850 Patent, including but not limited to Claim 10, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 850 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 850 Patent by such third parties. Defendants' acts of inducement include: providing the 850 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 850 Patent Accused Products; advertising the 850 Patent Accused Products in the United States and encourages the sale and offer for sale of the 850 Patent Accused Products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased (for example, https://www.sandisk.com/home; https://www.sandisk.com/oem-design/mobile/inand; https://www.sandisk.com/about/where-to-buy; https://www.sandisk.com/home/memory-cards/sd-cards/extremepro-sd-uhs-i; https://www.sandisk.com/home/memory-cards/microsd-cards/extremeplus-microsd); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 850 Patent Accused Products for purposes of technical assistance, design, replacement, sales, and marketing of the 850 Patent Accused Products (for example, http://kb.sandisk.com/ and

links therein; https://www.sandisk.com/oem-design/mobile/inand; https://pct1.sandisk.com/NewSearch.aspx; https://link.sandisk.com/welcome.html).

74. Defendants proceeded in this manner despite knowledge of the related 180 Patent and the 850 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 850 Patent. The Defendants had knowledge of the 850 Patent and the related 180 Patent, and the infringement of the 850 Patent as early as as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 850 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

75. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 850 Patent.

76. Defendants' infringement of the 850 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 850 Patent and the related 180 Patent and the infringement of the 850 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 850 Patent with full knowledge of that patent and its applicability to SanDisk's products. SanDisk's intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT V:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 8,307,180

77. MTL incorporates and realleges paragraphs 1 - 76 above as if fully set forth herein.

78. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 180 Patent, including but not limited to Claim 17-19,

21, 22, and 27, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority SD and MicroSD Cards compliant with SD Specification Version 3.00 or higher with Speed Class Control Command Functionality, as well as eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher (these SD Cards, microSD Cards, and eMMC memory devices are, collectively, the "180 Patent Accused Products"). The 180 Patent Accused Products include, for example and without limitation, SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46), SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A), and iNAND 7232.

79. By way of example, on information and belief, each SD or microSD Card that is a 180 Patent Accused Product is a memory device comprising one more registers for storing one or more predefined access profiles associated with the memory device (for example, SSR register stores one more predefined access profiles in SPEED_CLASS), and the predefined access profiles (for example, Speed Class profiles Class 2, Class 4, Class 6, and Class 10) are effective for determining how access to the memory device is configured for at least one usage (for example, a write using a Speed Class). SD Specification 3.00 at 7, 15, 89-90. On information and belief, the memory device also comprises a controller (for example, a card interface controller) for receiving one or more commands related to at least one usage of said memory device (for example, via the CMD line), and the one or more commands activate the one or more predefined access profiles associated with the memory device (for example, Initialization Command ACMD41 activates at least one Speed Class profile by setting the XPC bit, command frame bit 36, to 1). *Id.* at 15, 27, 90. On information and belief, the controller is also for configuring access to the memory device in accordance with at least one of the predefined access profiles so that the memory device is effective for the at least one usage (for example, CMD20, the Speed Class Control Command, configures the Allocation Units, "AUs," which are portions of the user area of the memory device, such

that the host writes sequentially in an AU according to the Speed Class Profile to ensure recording meets the minimum performance rate). *Id.* at 93, 108-09, 113-15, 117-19.

80. On information and belief, one or more access profiles correspond to at least one of a random and a sequential mode of access (for example, the Speed Class host writes sequentially in an AU). *Id.* at 109, 113, 115.

81. On information and belief, one or more access profiles corresponds to at least one of a read, a write, an erase, and a modify attribute operation (for example, the Speed Class host writes sequentially in an AU). *Id.* at 109, 113, 115.

82. On information and belief, one or more access profiles are adapted to produce an optimized performance associated with said memory device (for example, a Speed Class Profile ensures recording meets the minimum performance rate). *Id.* at 7, 117.

83. On information and belief, the performance is optimized in accordance with at least one of: data throughput, lifetime, and power consumption associated with the memory device (for example, a Speed Class Profile ensures recording meets the minimum performance rate). *Id.* at 7, 117.

84. On information and belief, one or more access profiles are associated with one or more partitions of the memory device (for example, the AUs are physical boundaries of the memory device and are partitions of the memory device). *Id.* at 93, 108.

85. As another example, on information and belief, each eMMC memory device that is a 180 Patent Accused Product is a memory device comprising one more registers for storing one or more predefined access profiles associated with the memory device (for example, up to fifteen registers, CONTEXT_CONF[51:37], available to store context configuration information), and the predefined access profiles (for example, an eMMC device has up to 15 contexts and has context configuration information that may be associated with a context) are effective for determining how access to the memory device is configured for at least one usage (for example, a read or write). JEDEC eMMC 4.51 at 81, 152, 184. On information and belief, the memory device also comprises a controller

for receiving one or more commands (for example, an eMMC Device Controller) related to at least one usage of said memory device, and the one or more commands activate the one or more predefined access profiles associated with the memory device (for example, CMD6 writes a non-zero value into bits [1:0] of a context configuration register). *Id.* at 7, 41, 81, 103, 149, 184. On information and belief, the controller is also for configuring access to the memory device in accordance with at least one of the predefined access profiles so that the memory device is effective for the at least one usage (for example, CMD23 with the subsequent read and/or write commands defines a portion of the memory to be configured in accordance with the designated context). *Id.* at 81, 105.

86. On information and belief, one or more access profiles correspond to at least one of a random and a sequential mode of access (for example, the Large Unit context flag indicates if the context is following Large Unit rules, and the Large Unit is the smallest unit that can be used for large sequential read/write operations). *Id.* at 81-82, 184.

87. On information and belief, one or more access profiles corresponds to at least one of a read, a write, an erase, and a modify attribute operation (for example, a context can be configured as a read-only context, a write-only context, or a read/write context). *Id.* at 81-82, 184.

88. On information and belief, one or more access profiles are adapted to produce an optimized performance associated with said memory device (for example, a Speed Class Profile ensures recording meets the minimum performance rate). *Id.* at 7, 117.

89. On information and belief, the performance is optimized in accordance with at least one of: data throughput, lifetime, and power consumption associated with the memory device (for example, for a large, sequential write pattern, all of the commands that fill a unit work faster because they can reduce overhead). *Id.* at 81.

90. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 180 Patent, including but not limited to Claim 17-

19, 21, 22, and 27, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 180 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 180 Patent by such third parties. Defendants' acts of inducement include: providing the 180 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 180 Patent Accused Products; advertising the 180 Patent Accused Products in the United States and encourages the sale and offer for sale of the 180 Patent Accused Products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased (for example, https://www.sandisk.com/home; https://www.sandisk.com/oem-design/mobile/inand; https://www.sandisk.com/about/where-to-buy; https://www.sandisk.com/home/memory-cards/sd-cards/extremepro-sd-uhs-i; https://www.sandisk.com/home/memory-cards/microsd-cards/extremeplus-microsd); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 180 Patent Accused Products for purposes of technical assistance, design, replacement, sales, and marketing of the 180 Patent Accused Products (for example, http://kb.sandisk.com/ and links therein; https://www.sandisk.com/oem-design/mobile/inand; https://pct1.sandisk.com/NewSearch.aspx; https://link.sandisk.com/welcome.html).

91. Defendants proceeded in this manner despite knowledge of the 180 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 180 Patent. The Defendants had knowledge of the 180 Patent and the infringement of the 180 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 180 Patent and the accused infringement, they have been and

remain willfully blind regarding the infringement they have induced and continue to induce.

92. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 180 Patent.

93. Defendants' infringement of the 180 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 180 Patent and the infringement of the 180 Patent as early as as described in paragraphs 34-36, and have proceeded to infringe the 180 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT VI:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 7,275,186

94. MTL incorporates and realleges paragraphs 1 - 93 above as if fully set forth herein.

95. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 186 Patent, including but not limited to Claims 16, 17, and 19 pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher (the "186 Patent Accused Products"). The 186 Patent Accused Products include, for example and without limitation, iNAND 7232.

96. By way of example, on information and belief, each 186 Patent Accused Product is a memory unit for use in an electronic device, the electronic device having a

host electronic module for processing data and a data bus for operatively connecting the host module to the memory unit. *See* JEDEC eMMC 4.41 at 163. The memory unit comprising a receiving mechanism (for example, a card interface controller) for receiving a first bit pattern from the host module through the data bus (for example, a specific data pattern or test pattern on each selected data line during the bus testing procedure). *See* JEDEC eMMC 4.41 at 16, 50, 205. Each memory unit further comprises a conversion mechanism (for example, a card interface controller), responsive to the received first bit pattern, for providing a second bit pattern on the data bus (for example, the reversed pattern sent from the card to the host), wherein the second bit pattern has at least a part of a complimentary pattern of the received first bit pattern (for example the reversed bit pattern), and wherein the host electronic module containing each memory unit is adapted to compare the first bit pattern to the second bit pattern as received in the host module (for example, an XNOR operation in step 30 of the bus testing procedure), for determining a usable bus width of the data bus (for example, by masking the result of the comparison of the XNOR operation in step 30 for either 8, 4, or 1 data lines in step 31 of the bus testing procedure) based on a predetermined relationship between the first bit pattern and the complementary pattern of the first bit pattern (for example, the result of the masking in step 31 of the bus testing procedure should be 0 [step 32]). *Id.* at 16, 50-51, 204-06.

97. Additionally, in each memory unit the received first bit pattern has an alternate pattern of '0' and '1' and the second bit pattern is complementary to the first bit pattern. *Id.* at 205.

98. Moreover, the data bus for each memory unit has a maximum bus width (for example, an 8 bit data bus) and the memory unit has a number of data pins (for example, DAT0-DAT7 = 8 data pins) for operatively connecting to the data bus, and wherein the number of data pins is equal to the number of data bits conveyable in the maximum bus width (for example, an 8 bit data bus and 8 data pins). *Id.* at 141, 186.

99. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 186 Patent, including but not limited to Claims 16, 17, and 19, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 186 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 186 Patent by such third parties. Defendants' acts of inducement include: providing the 186 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 186 Patent Accused Products; advertising the 186 Patent Accused Products in the United States and encourages the sale and offer for sale of the 186 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 186 Patent Accused Products for purposes of technical assistance, design, sales, and marketing of the 186 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand).

100. Defendants proceeded in this manner despite knowledge of the 186 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 186 Patent. The Defendants had knowledge of the 542 Patent and the infringement of the 542 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 186 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

101. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 186 Patent.

102. Defendants' infringement of the 186 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 186 Patent and the infringement of the 186 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 186 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT VII:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 7,827,370

103. MTL incorporates and realleges paragraphs 1 - 102 above as if fully set forth herein.

104. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 370 Patent, including but not limited to Claims 12, 13, 16, 17, 18, and 19 pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher (the "370 Patent Accused Products"). The 370 Patent Accused Products include, for example and without limitation, iNAND 7232.

105. By way of example, on information and belief, each 370 Patent Accused Product is an apparatus comprising an interface controller (for example, a card interface controller) arranged to write protect at least one part of a memory of said apparatus (for example, the addressed write-protect group) by a command (for example, SET_WRITE_PROT). *See* JEDEC eMMC 4.41 at 16, 63. On information and belief, each apparatus further comprises a data register (for example, the Extended CSD

Register) arranged to define at least one bit to indicate that permanent write protection of the at least one part of the memory is allowed (for example, Bit[2] and Bit[4] of the USER_WP[171] slice of the Extended CSD Register). *Id.* at 128, 146. Each apparatus further comprises, on information and belief, a controller (for example, the card interface controller) arranged to set the at least one bit (for example, Bit[2] and Bit[4] of the USER_WP[171] slice of the Extended CSD Register) in order to redefine the command (for example, SET_WRITE_PROT) to allow permanent write protection, that cannot be un-protected by a command (for example, a permanent clear write protect command), of the at least one part of the memory of said apparatus (for example, the addressed write-protect group). *Id.* at 16, 63-64, 146. On information and belief, the controller in each apparatus (for example, the card interface controller) is further arranged to execute the command in order to permanently write protect said at least one part of the memory (for example, CMD28 or SET_WRITE_PROT). *Id.* at 16, 89.

106. Further, on information and belief, the memory in each apparatus is arranged to comprise at least one memory group (for example, the size of the write protect group is set by WP_GRP_SIZE [36:32]). *Id.* at 121.

107. Further, on information and belief, each apparatus comprises an additional data register (for example, the CSD_Register) arranged to control existence and characteristics of the at least one part of the memory (for example, the write protect group size WP_GRP_SIZE [36:32]). *Id.* at 116, 121.

108. Further, the additional data register in each apparatus, on information and belief, is arranged to define access to the at least one part of the memory (for example, the write protect group enable WP_GRP_ENABLE slice of the CSD Register). *Id.* at 116, 121.

109. Further, on information and belief, the memory in each apparatus is arranged to implement different memory technologies (for example, FLASH and ROM memory).

110. Further, on information and belief, the apparatus is a multimedia card (MMC).

111. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 370 Patent, including but not limited to Claims 12, 13, 16, 17, 18, and 19, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 370 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 370 Patent by such third parties. Defendants' acts of inducement include: providing the 370 Patent Accused Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 370 Patent Accused Products; advertising the 370 Patent Accused Products in the United States and encourages the sale and offer for sale of the 370 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 370 Patent Accused Products for purposes of technical assistance, design, sales, and marketing of the 370 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand).

112. Defendants proceeded in this manner despite knowledge of the 370 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 370 Patent. The Defendants had knowledge of the 370 Patent and the infringement of the 370 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 370 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

113. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 370 Patent.

114. Defendants' infringement of the 370 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 370 Patent and the infringement of the 370 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 370 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT VIII:

DEFENDANTS' INFRINGEMENT OF U.S. PATENT NO. 7,739,487

115. MTL incorporates and realleges paragraphs 1 - 114 above as if fully set forth herein.

116. On information and belief, Defendants have infringed and continue to infringe one or more claims of the 487 Patent, including but not limited to Claims 20 and 21, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States without authority eMMC memory, including eMMC memory within eMCP, compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher (the "487 Patent Accused Products"). The 487 Patent Accused Products include, for example and without limitation, iNAND 7232.

117. By way of example, on information and belief, each 487 Patent Accused Product is a peripheral device having an MMC/SD-interface (for example, an MMC-interface) configured for booting (for example, the boot operation mode) a bootable host device configured for being booted from a peripheral device having an MMC/SD interface. *See* JEDEC eMMC 4.41 at 34. Each peripheral device, on information and belief, further comprises an MMC/SD-interface (for example, an MMC-interface),

provided with power terminal (for example, Vcc and Vccq pins), a data bus with data bus terminals (for example, the DAT0-DAT7 pins), a clock line with a clock terminal (for example, the CLK pin), and a command line with command terminal (for example, the CMD pin). *Id*. at 15-16. On information and belief, each peripheral device further comprises a peripheral device controller (for example, a card interface controller), connected to said MMC/SD-interface. *Id.* at 16. Each peripheral device further comprises, on information and belief, a memory module (for example, the memory core), connected to said peripheral device controller, and wherein said peripheral device controller is configured for sending the first data (for example, first boot data) of a predefined storage area (for example, a boot area or user area) via a data bus, staring with a start bit of the first data frame (for example, start bit "S"), when receiving power at the terminal of said MMC/SD-interface of said peripheral device, and a low signal at the command terminal of said MMC/SD-interface during power-up (for example, holding the command line for at least 74 cycles during power up). *Id.* at 16, 35-37, 108, 165.

118. Further, on information and belief, each peripheral device controller is further configured to send said first data of a predefined storage area via data bus, only when receiving a low signal at said command terminal of said MMC/SD-interface before or during power-up during the transmission of between 24 to 148, preferably between 60 and 100 and most preferably to 74 initialization clock signals. *Id.* at 36, 38, 165.

119. On information and belief, Defendants have induced and continue to induce infringement of one more claims of the 487 Patent, including but not limited to Claim 20 and 21, pursuant to 35 U.S.C. § 271(b) by encouraging third parties such as users, customers, distributors, wholesalers, retailers, affiliates, parents, subsidiaries, importers, or sellers to make, use, offer to sell, sell, and/or import into the United States without authorization the 487 Patent Accused Products. The making, using, offering to sell, selling, and/or importing into the United States constitutes direct infringement, literally or under the doctrine of equivalents, of one or more claims of the 487 Patent by such third parties. Defendants' acts of inducement include: providing the 487 Patent Accused

Products or components thereof to third parties and intending them to make, use, offer to sell, sell, and/or import the 487 Patent Accused Products; advertising the 487 Patent Accused Products in the United States and encourages the sale and offer for sale of the 487 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand); encouraging third parties to communicate directly with Defendants' representatives and providing information about the 487 Patent Accused Products for purposes of technical assistance, design, sales, and marketing of the 370 Patent Accused Products (for example, https://www.sandisk.com/oem-design/mobile/inand).

120. Defendants proceeded in this manner despite knowledge of the 487 Patent and their knowledge that specific actions they actively induced and continue to actively induce on the part of third parties constitute infringement of the 487 Patent. The Defendants had knowledge of the 487 Patent and the infringement of the 487 Patent as early as described in paragraphs 34-36. At the very least, because Defendants have been and remain on notice of the 487 Patent and the accused infringement, they have been and remain willfully blind regarding the infringement they have induced and continue to induce.

121. MTL has suffered and continues to suffer damages as a result of Defendants' infringement of the 487 Patent.

122. Defendants' infringement of the 487 Patent has been and continues to be willful, deliberate, and in disregard of MTL's patent rights. The Defendants had knowledge of the 542 Patent and the infringement of the 487 Patent as early as described in paragraphs 34-36, and have proceeded to infringe the 487 Patent with full knowledge of that patent and its applicability to SanDisk's products. Defendants' intentional, knowing, egregious, culpable, willful, wanton, malicious, bad faith, deliberate, consciously wrongful, and/or flagrant infringement entitles MTL to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

PRAYER FOR RELIEF

MTL respectfully prays for relief as follows:

(a) a judgment that Defendants have infringed and continue to infringe one or more claims of the Asserted Patents;

(b) a judgment that Defendants have induced infringement and continue to induce infringement of one or more claims of the Asserted Patents;

(c) a judgment that Defendants have willfully infringed one or more claims of the Asserted Patents;

(d) a judgment awarding MTL all damages adequate to compensate for Defendants' infringement, and in no event less than a reasonable royalty for Defendants' infringement, including all pre-judgment and post-judgment interest at the maximum rate allowed by law;

(e) a judgment awarding MTL treble damages pursuant to 35 U.S.C. § 284 as a result of Defendants' willful conduct;

(f) a judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding MTL its reasonable attorneys fees; and

(g) a judgment awarding MTL such other relief as the Court may deem just and equitable.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff MTL demands a trial by jury of this action.

Dated: December 6, 2016

/s/ Matthew D. Powers
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