

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

In the Matter of

**CERTAIN FLASH MEMORY DEVICES
AND COMPONENTS THEREOF**

Investigation No. 337-TA-_____

**PUBLIC VERSION OF VERIFIED COMPLAINT UNDER SECTION 337
OF THE TARIFF ACT OF 1930, AS AMENDED**

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2	U.S. Patent No. RE45,486
3	U.S. Patent No. 7,565,469
4	U.S. Patent No. 9,063,850
5	U.S. Patent No. 8,307,180
6	Certified Patent Assignment Reel/Frame Number 013928-0450
7	Certified Patent Assignment Reel/Frame Number 015550-0104
8	Certified Patent Assignment Reel/Frame Number 017102-0136
9	Certified Patent Assignment Reel/Frame Number 017102-0140
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27	SanDisk , SanDisk Global Locations, https://www.sandisk.com/about/contact/locations
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APPENDICES

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C	Prosecution History of U.S. Patent No. 7,565,469
D	Prosecution History of U.S. Patent No. 9,063,850
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I. INTRODUCTION

1. Complainant Memory Technologies, LLC (“MTL”) requests that the United States International Trade Commission commence an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, based on the unlawful importation into the United States, the sale for importation, and the sale within the United States after importation of certain Secure Digital (“SD”) Cards and microSD Cards, or components thereof (collectively, “the Accused Products”), which directly or indirectly infringe one or more of the following claims of U.S. Patent Nos. RE45,542 (“the 542 Patent”); RE45,486 (“the 486 Patent”); 7,565,469 (“the 469 Patent”); 9,063,850 (“the 850 Patent”); and 8,307,180 (“the 180 Patent”) (collectively, “the Asserted Patents”):

Asserted Patent	Asserted Claims
U.S. Patent No. RE45,542	Claim 38
U.S. Patent No. RE45,486	Claims 6, 9, 10, 22, 23, 26, 27
U.S. Patent No. 7,565,469	Claim 19
U.S. Patent No. 9,063,850	Claim 10
U.S. Patent No. 8,307,180	Claims 17-19, 21, 22, 27

2. Certified copies of each of the Asserted Patents are attached as **Exhibit Nos. 1-5**. MTL owns all right, title, and interest in each of the Asserted Patents. Copies of the recorded assignments for each of the Asserted Patents are attached as **Exhibits 6-16**.¹ Copies of the prosecution histories for each of the Asserted Patents are attached as **Appendices A-E**.

3. The Proposed Respondents are SanDisk Corporation (“SanDisk”), SanDisk’s direct and indirect parents Western Digital Technologies, Inc. and Western Digital Corporation (collectively “Western Digital”), as well as SanDisk’s subsidiaries and/or affiliates: SanDisk LLC,

¹ With respect to U.S. Patents Nos. RE45,542 and RE45,486, the reissue applications were filed following assignment of the original patents to MTL, and **Exhibits 6** and **7** are copies of the recorded assignments for those original patents.

SanDisk Limited, SanDisk Storage Malaysia Sdn. Bhd., and SanDisk Semiconductor (Shanghai) Co., Ltd. (all respondents collectively “SanDisk Respondents”). The Accused Products are SD Cards and microSD Cards that are manufactured and/or assembled overseas by or on behalf of the SanDisk Respondents. The Accused Products are then sold for importation into the United States, imported into the United States, and/or sold within the United States after importation by or on behalf of SanDisk Respondents.

4. As required by 19 U.S.C. § 1337(a)(2) and (3), an industry in the United States relating to articles protected by the Asserted Patents exists based on both (A) MTL’s investments in licensing the Asserted Patents, including investments resulting in licensees who design, develop, manufacture and have manufactured, and sell products that practice each of the Asserted Patents, and (B) the investments by MTL’s licensees in their own domestic manufacturing, assembly, testing, and research and development, among other activities, of products that practice each of the Asserted Patents. The covered products for purposes of domestic industry are the following flash memory devices: SD Cards, microSD Cards, embedded Multimedia Cards (“eMMC”), and embedded multi-chip packages (“eMCP”).

5. MTL seeks, as relief, a permanent limited exclusion order barring from entry into the United States all Respondents’ SD and microSD Cards that directly infringe and/or induce the infringement of one or more of the claims of any of the Asserted Patents. MTL also seeks a permanent cease and desist order directed to SanDisk Respondents prohibiting the sale for importation, importation, sale after importation, use, offer for sale, sale, distribution, advertising, testing, repair, technical support, or any other commercial activity related to SanDisk Respondents’ SD and microSD Cards that infringe, directly or indirectly, one or more claims of any of the Asserted Patents. Further, MTL requests that the Commission impose a bond during the

Presidential review period pursuant to 19 U.S.C. § 1337(e)(1) and (f)(1) to prevent further injury to the domestic industry of MTL and its licensees relating to each of the Asserted Patents.

II. COMPLAINANT

6. Complainant 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. *See* **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at Exhibit 21.1.

7. MTL owns a world-wide portfolio of patents related to memory technologies. In particular, as many as 81 of MTL's patents are members of patent families that contain patents essential to standards that are applicable to memory and storage technologies used in electronic devices, including the Secure Digital Association Physical Layer Specification, ("SD Standard") as well as the JEDEC eMMC standard.² *See* **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at 1-2; **Ex. 18** [Confidential Declaration of James Baker], ¶ 4. These patents cover embedded and removable memory components and storage subsystems. MTL acquired a patent portfolio of over 125 patents and patent applications from Nokia in March of 2013. *See* **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at 19. Since that time, MTL's memory portfolio has grown to approximately 160 patents and patent applications, with approximately 120 issued patents. *See* **Ex. 20** [Pendrell Corporation 2014 Form 10-K] at 1; **Ex. 18** [Confidential Declaration of James Baker], ¶ 4.

8. MTL has successfully licensed its portfolio of patents since 2013, entering into four licenses with leading companies in the flash memory market. In 2014, MTL licensed its patent portfolio to two leading companies for the manufacture and sale of flash memory products:

² The JEDEC eMMC standard refers to the JEDEC Embedded MultiMediaCard (eMMC) eMMC/Card Product Standard (JESD84-A441) or higher. MTL will use "eMMC" to refer to eMMC as governed by the JEDEC eMMC Standard in its complaint and exhibits.

Samsung and [REDACTED] See **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at 19; **Ex. 21** [Pendrell Corporation 2013 Form 10-K] at 2; **Ex. 18** [Confidential Declaration of James Baker], ¶ 8. These two licenses yielded significant upfront license fees and in one case a potential future royalty stream. See **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at 19. The patents licensed to Samsung permit the manufacture and distribution of products including eMMC, as will be described further below. **Ex. 22** [Pendrell Corporation March 7, 2014, Form 8-K]; **Ex. 18** [Confidential Declaration of James Baker], ¶ 8. The [REDACTED] license covers embedded Multimedia Cards (“eMMC”) technologies. **Ex. 23** [Pendrell June 16, 2014, Press Release]. In the first quarter of 2015, MTL licensed its patent portfolio to SK Hynix, Inc., to permit manufacture and distribution of embedded Multimedia Cards (“eMMC”). See **Ex. 17** [Pendrell Corporation 2015 Form 10-K] at 19; **Ex. 24** [Pendrell Jan. 9, 2015, Press Release]. Most recently, in 2016, MTL signed a license agreement with SanDisk’s flash-memory joint venture partner Toshiba covering SD Cards, microSD Cards, and eMMC technologies. **Ex. 25** [Pendrell May 20, 2016, Press Release]; **Ex. 26** [Toshiba October 20, 2008, Press Release]. With the consummation of that license, nearly all of the leading providers of flash memory have been licensed other than SanDisk. The flash memory industry has thus widely recognized the value and importance of MTL’s patented technology.

III. PROPOSED RESPONDENTS

9. On information and belief, Proposed Respondent SanDisk is incorporated under the laws of the State of Delaware, with its principal place of business at 951 SanDisk Dr., Milpitas, CA 95035. See **Ex. 27**, [SanDisk Global Locations] at 1; **Ex. 28**, at Exhibit 2.1 [Agreement and Plan of Merger] to SanDisk 8-K, at 19; **Ex. 29** [SanDisk 2015 Form 10-K] at cover. On information and belief, as of May 12, 2016, SanDisk became an indirect, wholly owned subsidiary of Western Digital Corporation, which is also incorporated under the laws of the State of Delaware. See **Ex. 30** at Western Digital Corporation 8-K at 2, and at Schedule 5.10 of Exhibit 10.4 to Western Digital

Corporation 8-K at 9. 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 SD Cards and microSD Cards that are manufactured outside of the United States. *See* **Ex. 29** [SanDisk's 2015 Form 10-K] at 5-6.

10. On information and belief, Proposed Respondent SanDisk LLC is organized under the laws of the State of Delaware, with its principal place of business at 951 SanDisk Dr., Milpitas, CA 95035. *See* **Ex. 31** [Non-Disclosure Agreement] at 3; **Ex. 32** at Exhibit 21 to Western Digital 2016 10-K at 3. SanDisk LLC was a party to the non-disclosure agreement entered between MTL and Western Digital. **Ex. 31** [Non-Disclosure Agreement] at 1, 3. On information and belief, SanDisk LLC is engaged in the same business as SanDisk and/or Western Digital.

11. On information and belief, Proposed Respondent Western Digital Corporation is incorporated under the laws of the State of Delaware, with its principal place of business at 3355 Michelson Dr., Suite 100, Irvine, CA 92612. *See* **Ex. 33** [Western Digital Corporation 2015 Form 10-K] at cover. On information and belief, as of May 12, 2016, SanDisk became an indirect, wholly owned subsidiary of Western Digital Corporation. *See* **Ex. 30** at Western Digital Corporation 8-K at 2, and at Schedule 5.10 of Exhibit 10.4 to Western Digital Corporation 8-K at 9. SanDisk is now a "Western digital brand," and Western Digital Corporation or its affiliates are identified as holding the copyright on SanDisk's website. **Ex. 34** [<https://www.sandisk.com/>] at 2.

12. On information and belief, Proposed Respondent Western Digital Technologies, Inc. is incorporated under the laws of the State of Delaware, with its principal place of business at 951 SanDisk Dr., Milpitas, CA 95035. **Ex. 27** [SanDisk Global Locations] at 1; **Ex. 31** [Non-Disclosure Agreement] at 3; **Ex. 30** at Western Digital Corporation 8-K at 2, and at Schedule 5.10

of Exhibit 10.4 to Western Digital Corporation 8-K at 5. 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. **Ex. 30** at Western Digital Corporation 8-K at 2, and at Schedule 5.10 of Exhibit 10.4 to Western Digital Corporation 8-K at 5, 9. On information and belief, Western Digital Technologies, Inc. is also the seller of record and licensee in the Americas of SanDisk products. **Ex. 34** [<https://www.sandisk.com/>] at 2. These products include, but are not limited to, the Accused Products. SanDisk also identifies Western Digital Technologies, Inc.'s headquarters in Milpitas, California, as SanDisk's headquarters. **Ex. 27** [SanDisk Global Locations] at 1.

13. On information and belief, Proposed Respondent SanDisk Limited is a direct, wholly owned subsidiary of SanDisk and is incorporated under the laws of Japan, with its principal place of business at 8F Nisso 15 Bldg. 2-17-19 Shin-Yokohama, Kohoku-ku, Yokohama, Japan 222-0033 or 800 Yamanoishiki-cho, Yokkaichi-shi, Mie-ken 512-8550, Japan. **Ex. 27** [SanDisk Global Locations] at 3; **Ex. 29** at Exhibit 21.1 to SanDisk 2015 Form 10-K; **Ex. 30** at Schedule 5.10 of Exhibit 10.4 to Western Digital Corporation 8-K at 11; **Ex. 35** [SanDisk Manufacturer's Warranty] at 2. On information and belief, SanDisk Limited is involved in the manufacture, sale for importation, and/or importation into the United States of the Accused Products. **Ex. 36** [SanDisk August 2, 2006, Press Release] at 1. In particular, on information and belief, SanDisk Limited is at least involved in the manufacture of NAND flash wafers used in the Accused Products. *Id.*

14. On information and belief, Proposed Respondent SanDisk Storage Malaysia Sdn. Bhd. is an indirect, wholly owned subsidiary of SanDisk and is incorporated under the laws of Malaysia, with its principal place of business at Plot 18, Lorong Jelawat 4, Kawasan Perindustrian,

Seberang Jaya, 13700 Perai, Penang, Malaysia or Plot 301A Persiaran Cassia Selatan 1, Taman Perindustrian Batu Kawan, MK13 Batu Kawan, Seberang Perai Selatan, 14100 Penang, Malaysia. **Ex. 27** [SanDisk Global Locations] at 3; **Ex. 29**, Exhibit 21.1 to SanDisk 2015 Form 10-K; **Ex. 30** at Schedule 5.10 of Exhibit 10.4 to Western Digital Corporation 8-K at 10; **Ex. 37** [Penang Career Assistance and Talent Center] at 8-11. On information and belief, SanDisk Storage Malaysia Sdn. Bhd. is involved in the manufacture, sale for importation, and/or importation into the United States of the Accused Products. **Ex. 38** [Business News] at 2. In particular, on information and belief, SanDisk Storage Malaysia Sdn. Bhd. is at least involved in the manufacture of flash memory solutions using wafers imported from Japan. *Id.* One public job posting for SanDisk Storage Malaysia Sdn. Bhd. provides evidence that at least some of those flash memory solutions include the accused SD and MicroSD Cards. *See* **Ex. 37** [Penang Career Assistance and Talent Center] at 6 (describing job responsibilities in Malaysia that include “SD label/lid & packing material (tray, T&R, box.etc) design and qualification”).

15. On information and belief, Proposed Respondent SanDisk Semiconductor (Shanghai) Co., Ltd. is an indirect, wholly owned subsidiary of SanDisk and is incorporated under the laws of the Peoples Republic of China, with its principal place of business at No. 388, Jiang Chuan East Road, Minhang District, Shanghai 200241, P.R. China. **Ex. 27** [SanDisk Global Locations] at 3; **Ex. 29** at Exhibit 21.1 to SanDisk 2015 Form 10-K; **Ex. 30** at Schedule 5.10 of Exhibit 10.4 to Western Digital Corporation 8-K at 8-11; **Ex. 39** [Occupational Health and Safety Management System Certificate]. On information and belief, SanDisk Semiconductor (Shanghai) Co., Ltd. is involved in the manufacture, sale for importation, and/or importation into the United States of SanDisk’s products, including but not limited to the Accused Products. **Ex. 40** [SanDisk September 27, 2007, Press Release] at 1-2. In particular, on information and belief, SanDisk

SemiConductor (Shanghai) Co., Ltd. is at least involved in the manufacture of certain Accused Products, such as microSD and SDHC cards, using wafers from SanDisk's fabrication facilities in Japan. *Id.*

16. On information and belief, SanDisk Respondents themselves and/or through the activities of their affiliates, parents, subsidiaries, and third parties acting on their behalf design, develop, manufacture, make, sell, use, offer for sale, import, sell for importation, and sell within the United States after importation the accused SD Cards and microSD Cards that are manufactured outside of the United States. *See Ex. 29* [SanDisk's 2015 Form 10-K] at 5-6. SanDisk Respondents themselves and/or through the activities of their affiliates, parents, subsidiaries, and third parties acting on their behalf sell the Accused Products within the United States by various means, including directly and through distributors to consumer electronics stores, office superstores, mobile phone stores, mass merchants, e-commerce retailers, catalog and mail order companies, drug stores, supermarkets, convenience stores, and kiosks. *See id.* at 7. SanDisk Respondents themselves and/or through the activities of their affiliates, parents, subsidiaries, and third parties acting on their behalf also perform services to support the importation and sale of the Accused Products into and within the United States, including marketing of the Accused Products, repair or replacement of the Accused Products, and other after-sale services, such as supporting the Accused Products, as well as providing technical support to U.S.-based customers and distributors for the Accused Products. *See Ex. 41* [SanDisk Global Customer Care].

17. SanDisk Respondents are aware of the SD Standard and the technological elements that SD cards must support in order to be compliant with the SD Standard. Indeed, SanDisk was a founding member of the SD Association that promulgates the SD Standard to which four of the five Asserted Patents are essential. *See Ex. 42* [About the SD Association] at 1. Toshiba, a licensee

of the Asserted Patents and the MTL portfolio, is the other founder of the SD Association and remains a major force in today's market for SD and micro SD cards. *See id.* SanDisk has long held the highest worldwide market share of flash card revenue, which was reported as [REDACTED] as of 2013. **Ex. 43** [Market Share: Flash Cards and USB Flash Drives, Worldwide, 2013] at 2. SanDisk acknowledges as much, touting as recently as July 2015 that it has "held the number-one market share position worldwide for 13 straight years." **Ex. 44** [SanDisk July 13, 2015, Press Release] at 3. According to Gartner, Samsung and Toshiba, both licensed to MTL's portfolio, came in at [REDACTED], respectively, with an aggregate market share of [REDACTED]. **Ex. 43** [Market Share: Flash Cards and USB Flash Drives, Worldwide, 2013] at 2. No other manufacturer had over [REDACTED] of worldwide market share by revenue in 2013.

IV. SANDISK'S REFUSAL TO NEGOTIATE RAND LICENSE

18. Four of the five Asserted Patents are essential to the SD Standard.³ On information and belief and as will be described below, the SD and microSD Cards that comprise the Accused Products are compliant with the SD Standard, as are certain covered SD and microSD products for purposes of domestic industry. Further, all five of the Asserted Patents are essential to the JEDEC eMMC standard.⁴ As will be described below, certain covered products that demonstrate the existence of domestic industry comply with the JEDEC EMMC standard.

19. MTL has widely licensed the Asserted Patents on reasonable and non-discriminatory ("RAND") terms. MTL has licensed the Asserted Patents to multiple companies that make flash memory products that practice the SD Standard or the JEDEC eMMC standard. MTL's licensees include [REDACTED], SK Hynix, Samsung, and most recently Toshiba, SanDisk's flash

³ The 850, 180, and 542 Patents are essential to versions 3.00 and higher; and the 486 Patent is essential to versions 2.00 and higher.

⁴ The 850 and 180 Patents are essential to versions 4.51 and higher; and the 469, 542, and 486 Patents are essential to versions 4.41 and higher.

memory joint-venture partner. *See* Ex. 18 [Confidential Declaration of James Baker], ¶ 8. MTL's licenses with these parties are on reasonable and non-discriminatory ("RAND") terms. [REDACTED]

[REDACTED] Proposed respondent SanDisk is the lone major flash memory company to hold out and decline to negotiate a RAND license to MTL's Asserted Patents. MTL requests that an investigation be instituted because SanDisk continues to practice the Asserted Patents without a license.

20. MTL has diligently and repeatedly attempted to offer SanDisk a license to the Asserted Patents on RAND terms consistent with the rates paid by SanDisk's flash memory competitors in the United States. On October 23, 2013, MTL notified SanDisk via letter [REDACTED]

[REDACTED] *See* Ex. 47. [REDACTED] MTL again wrote to SanDisk on November 16, 2015. *See* Ex. 48. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

MTL sent a third letter, dated April 15, 2016, to SanDisk [REDACTED]

[REDACTED]

[REDACTED]

21. SanDisk responded to MTL's April 15, 2016, letter on April 20, 2016, [REDACTED]

[REDACTED] See Ex. 50. [REDACTED]

[REDACTED] MTL
informed SanDisk, on April 21, 2016, [REDACTED]

[REDACTED] See Ex. 51. On

April 29, 2016, MTL wrote to SanDisk [REDACTED]

[REDACTED] See Ex. 52. On May 2, 2016, SanDisk [REDACTED]

[REDACTED] Ex. 53. MTL reiterated by return letter [REDACTED]

[REDACTED] Ex. 54.

22. After MTL's May 2, 2016, letter to SanDisk, MTL successfully consummated a license to the Asserted Patents to Toshiba. See Ex. 18 [Confidential Declaration of James Baker], ¶ 8. Significantly, Toshiba and SanDisk are partners in a joint venture that manufactures NAND flash wafers. See Ex. 26 [Toshiba October 20, 2008, Press Release]; Ex. 55 [Toshiba January 29, 2009, Press Release]. The wafers from the joint venture are split between SanDisk and Toshiba, with each company using at least some of the wafers to make SD and microSD Cards and eMMC devices that practice the SD Standard and the eMMC standard. See Ex. 26; Ex. 55. As a result of

the Toshiba license, the SD and microSD Cards made from Toshiba's share of the flash memory produced by the joint venture are licensed to the Asserted Patents. The SD and microSD Cards that practice the same standards but are instead made from SanDisk's share of the flash memory produced by the joint venture remained unlicensed. On May 20, 2016, MTL [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. Ex. 56. [REDACTED]

[REDACTED] *Id.*

23. On May 31, 2016, [REDACTED]

[REDACTED]

MTL again wrote to SanDisk, [REDACTED]. Ex. 57. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] On June

9, SanDisk responded, [REDACTED]

[REDACTED] Ex. 58. MTL responded again on June 10, 2016,

[REDACTED]

[REDACTED]

[REDACTED] Ex. 59. SanDisk responded [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Ex. 60.

24. On July 8, 2016, [REDACTED] MTL

[REDACTED]
Ex. 61. On July 11, SanDisk responded, [REDACTED]

[REDACTED] Ex. 62. MTL responded [REDACTED]

[REDACTED] Ex. 63.

25. On July 14, 2016, MTL [REDACTED]

[REDACTED] Ex. 64. On July 18, 2016, SanDisk [REDACTED]

[REDACTED] Ex. 65. [REDACTED]

[REDACTED] Ex. 66. On July 19, 2016, SanDisk responded [REDACTED]

[REDACTED] Ex. 67. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Ex. 68.

26. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] See Ex. 68; Ex. 69. [REDACTED]

[REDACTED] See Ex. 69,

presentation at 2.

27. On July 28, 2016, [REDACTED]
[REDACTED]

[REDACTED]

28.

[REDACTED]

[REDACTED]

[REDACTED] *See*

Ex. 70.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

29. On August 30, 2016, MTL received

[REDACTED]

[REDACTED]

Ex. 71.

[REDACTED]

[REDACTED]

[REDACTED] *Id.* [REDACTED]

[REDACTED]

[REDACTED]

Ex. 72. [REDACTED]

[REDACTED]

30. On September 16, 2016, SanDisk [REDACTED]

[REDACTED] Ex. 73. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

31. On September 21, 2016, MTL [REDACTED]

[REDACTED] Ex. 74. [REDACTED]

[REDACTED]

[REDACTED] On October 9, 2016, SanDisk [REDACTED]

[REDACTED] Ex. 75. [REDACTED]

[REDACTED]

[REDACTED] Ex. 18 [Confidential Declaration of James Baker], ¶ 15.

32. On October 28, 2016, [REDACTED]

[REDACTED] *Id.*, ¶ 16. [REDACTED]

[REDACTED]

[REDACTED] *Id.*

33. In summary, MTL has vigorously attempted to engage SanDisk regarding the need for SanDisk to take a RAND license. In response, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] In sum, MTL has done everything it reasonably can to negotiate a RAND license with SanDisk as it has successfully done with SanDisk's major competitors. SanDisk's unwillingness to license MTL's patents on RAND terms is fundamentally unfair to MTL and its licensees, especially where SanDisk's competitors in the flash memory industry have already entered licenses to MTL's portfolio on comparable global RAND license terms. MTL now seeks relief through adversarial proceedings. MTL remains willing at any time notwithstanding the pendency of the requested investigation to meet with SanDisk to discuss RAND terms and, if agreement can be reached, to enter a RAND license with SanDisk.

34. As detailed below, the Asserted Patents and the rest of MTL's flash-memory-related portfolio protect substantial numbers of licensed products that are made and/or sold in the United States. SanDisk is the most significant holdout in the industry, choosing to continue its unlawful and unfair importation of infringing articles. Accordingly, MTL files the present Complaint seeking institution of an investigation into the SanDisk Respondents' ongoing wrongful acts.

V. THE TECHNOLOGY AND PRODUCTS AT ISSUE

35. Pursuant to Commission Rule 210.12(a)(12), MTL states that the Accused Products are certain SanDisk SD Cards and microSD Cards. The covered products for purposes of domestic industry are SD Cards, microSD cards, and eMMC (embedded Multi-Media Controller) and eMCP (embedded Multi-Chip Packages) products.

A. Flash Memory Overview

36. SD Cards, microSD Cards, and eMMC and eMCP products are all applications of flash memory technology. Flash memory is widely used in consumer electronic and mobile

devices, which include both removable memory cards and memory devices that can be embedded in smartphones, laptops, and other consumer electronic devices.

37. Flash memory is a shorthand term referring to flash electrically erasable and programmable read only memory (“EEPROM”). Flash memory is a type of solid-state non-volatile memory in which a large block of memory can be erased all at once—hence the name “flash.” Flash memory can operate in a wide range of temperature and humidity and is resistant to vibration and shock.

38. Flash memory devices are commonly composed of a controller and one or more flash memory chips mounted to a printed circuit board that includes an interface to a host system. The host system can send commands to the controller that include commands to read and write data on the flash memory chips. Further relevant aspects of flash memory technology are discussed below in connection with the Asserted Patents and the Accused Products.

B. SD And microSD Cards

39. The Accused Products, and certain of the covered domestic industry products, are species of flash-based memory devices known as SD Cards and microSD Cards. SD and microSD Cards are commonly used in computers, digital cameras, and smart phones for data storage and transfer. Because SD and microSD Cards are based on flash memory, which is a form of non-volatile memory, they are able to retain data stored on them even when the memory device is not receiving power. SD and microSD cards include flash memory components and a controller.

C. Embedded MultiMedia Cards (eMMC) and Embedded Multichip Packages (eMCP)

40. The covered products for purposes of domestic industry include the SD and microSD Cards discussed above, but also include additional flash-memory-containing products known as eMMC and eMCP products. An eMMC memory device stores data in flash memory

much like an SD or microSD Card, except that the memory is embedded onto a device's motherboard. eMMC devices include flash memory and a controller. eMMC is relatively inexpensive to manufacture and integrate, and as a result eMMC storage is most commonly used for internal memory in smartphones. However, eMMC storage is also found in tablets, laptops, set top boxes, and smart watches, as well as other consumer electronics.

41. One form in which eMMC memory is found in the market is an Embedded Multi-Chip Package, or eMCP. eMCP devices combine eMMC memory and low power double data rate ("LPDDR") memory into a single chip package. The combination saves space and simplifies the design process for products relative to incorporating each separately. eMCP modules are often used in basic model smartphones.

VI. THE PATENTS-IN-SUIT AND NON-TECHNICAL DESCRIPTION OF THE INVENTIONS⁵

A. U.S. Patent No. RE45,542

1. Identification And Ownership Of The 542 Patent

42. United States Patent No. RE45,542, titled "Method And A System For Determining The Power Consumption In Connection With An Electronic Device, And An Electronic Device," issued on June 2, 2015, to inventor Kimmo Mylly. *See Ex. 1* [542 Patent]. The 542 Patent issued from Application No. 13/902,227 filed on May 24, 2013. *Id.* The 542 Patent is a reissued patent of Patent No. 7,278,033, which issued on October 2, 2007, from application number 10/401,338, which was filed on March 26, 2003. *Id.*

43. The 542 Patent has 7 independent and 33 dependent claims. *Id.* MTL is asserting claim 38 of the 542 Patent in this Investigation.

⁵ The non-technical descriptions of the patented technology are provided solely for compliance with the Commission Rules and are not intended to limit, define, or otherwise affect the construction and/or application of any claim term.

44. The Asserted Claim of the 542 Patent is valid, enforceable, and currently in full force and effect until the expiration of the 542 Patent on March 27, 2022. MTL owns by assignment the entire right, title, and interest in and to the 542 Patent. On January 16, 2003, Kimmo Mylly assigned his interest in the application titled “Method And A System For Determining The Power Consumption In Connection With An Electronic Device, And An Electronic Device,” i.e., the 10/401,338 application, to Nokia Corporation. **Ex. 6** [Patent Assignment]. On March 24, 2013, Nokia Corporation assigned its interest in Patent No. 7,278,033 to Nokia Inc. **Ex. 12** [Patent Assignment] at frame 0384. On March 25, 2013, Nokia Inc. assigned its interest in Patent No. 7,278,033 to Memory Technologies LLC. **Ex. 13** [Patent Assignment] at frame 0047.

45. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by the prosecution history of the 542 Patent and three copies thereof. **Appx. A.** Pursuant to Commission rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the 542 Patent. **Appx. F.**

2. Non-Technical Description Of The 542 Patent

46. One potential source of inefficiency in the operation of flash memory is that the flash memory must be compatible with a variety of host devices, and different host devices support different power consumption levels. These different power consumption levels also correspond to a variety of speeds at which the flash memory can operate when it is used in conjunction with those host devices.

47. The 542 Patent is directed to allowing a host device such as a smartphone or camera to control the power consumption of a peripheral device such as an SD or microSD card within ranges defined by the peripheral device using values programmed into the peripheral device. When the host device first supplies power to the peripheral device, such as when an SD card is inserted into a camera, the host supplies power at a default value programmed within the peripheral device.

The peripheral device may be pre-programmed with additional power limits that are higher than the default value. Using these limits, the host device can deliver power to the peripheral device in a range between the default value and the higher power limit. The power consumption range of the peripheral device includes both the default power consumption value and a maximum power consumption value programmed within the peripheral device.

3. Foreign Counterparts To The 542 Patent

48. The foreign patents and patent applications corresponding to the 542 Patent are:

U.S. Patent No. RE45,542					
Application Date	Application Number	Status	Patent Date	Patent No.	Country
3/27/2002	20020594	Granted	5/31/2005	115562	FI

49. On information and belief, no other foreign applications or patents corresponding to the 542 Patent have been filed, abandoned, or rejected.

4. Licenses Related To The 542 Patent

50. As required by Commission Rule 210.12(a)(9)(iii), a list of currently-licensed entities of which MTL is aware is contained in the Declaration of James Baker. *See Ex. 19.*⁶

B. U.S. Patent No. RE45,486

1. Identification And Ownership Of The 486 Patent

51. United States Patent No. RE45,486, titled "Method For Addressing A Memory Card, A System Using A Memory Card, And A Memory Card," issued on April 21, 2015, to inventors Marko Ahvenainen and Kimmo Mylly. *See Ex. 2 [486 Patent]*. The 486 Patent issued

⁶ The Asserted Patents are part of a patent portfolio that was previously acquired by MTL from a third party and as a result there may be licensees of which MTL is not presently aware. A copy of the license with [REDACTED] that MTL is relying upon for purposes of domestic industry is provided as confidential Exhibit 76 to this Complaint, pursuant to 19 C.F.R. § 210.12(a)(9)(iv). MTL will submit additional licenses as supplemental exhibits to the complaint when it obtains consent from its licensees.

from Application No. 13/902,258 filed on May 24, 2013. *Id.* The 486 Patent is a reissued patent of Patent No. 7,257,669, which issued on August 14, 2007, from application number 10/770,852, which was filed on February 2, 2004. *Id.*

52. The 486 Patent has 7 independent and 24 dependent claims. *Id.* MTL is asserting claims 6, 9, 10, 22, 23, 26, and 27 of the 486 Patent in this Investigation.

53. The Asserted Claim of the 486 Patent is valid, enforceable, and currently in full force and effect until the expiration of the 486 Patent on February 7, 2023. MTL owns by assignment the entire right, title, and interest in and to the 486 Patent. On March 23, 2004, Marko Ahvenainen and Kimmo Mylly assigned their interests in the 10/770,852 application to Nokia Corporation. **Ex. 7** [Patent Assignment]. On March 24, 2013, Nokia Corporation assigned its interest in Patent No. 7,257,669 to Nokia Inc. **Ex. 12** [Patent Assignment] at frame 0384. On March 25, 2013, Nokia Inc. assigned its interest in Patent No. 7,257,669 to Memory Technologies LLC. **Ex. 13** [Patent Assignment] at frame 0047.

54. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by the prosecution history of the 486 Patent and three copies thereof. **Appx. B.** Pursuant to Commission rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the 486 Patent. **Appx. G.**

2. Non-Technical Description Of The 486 Patent

55. A memory card has locations for storing data, and those locations have addresses. The addresses are used to store data at the locations or retrieve data from the locations. Before the 486 Patent, each address corresponded to a single location. This was problematic because memory cards have a limited number of possible addresses (the “address space”). Because each address corresponded to a single location, the fixed number of addresses effectively limited the storage capacity of the card to 4GB—even as flash memory technology was capable of storing a larger

amount of data in a single memory. A card could not use more memory locations than it had addresses for those locations.

56. One aspect of the 486 Patent is directed to how to address locations within a memory when the number of memory locations is too large to allow each address to be assigned to a single memory location. The 486 Patent solves this problem by allowing the number of memory locations to be calculated and permitting each memory address to be used for addressing multiple locations in the memory, rather than just one memory location per address. This permits a fixed number of addresses to be used for addressing a memory of an expanded size.

3. Foreign Counterparts To The 486 Patent

57. The foreign patents and patent applications corresponding to the 486 Patent are:

U.S. Patent No. RE45,486					
Application Date	Application Number	Status	Patent Date	Patent No.	Country
2/7/2003	20030191	Granted	10/31/2006	117489	FI
1/29/2004	PCT/FI2004/050007	Expired			PTC
1/29/2004	04706201.3	Granted	11/20/2013	1590739	EP
1/29/2004	04706201.3	Granted	11/20/2013	1590739	AT
1/29/2004	04706201.3	Granted	11/20/2013	1590739	BE
1/29/2004	04706201.3	Granted	11/20/2013	1590739	FR
1/29/2004	04706201.3	Granted	11/20/2013	602004043827-8	DE
1/29/2004	04706201.3	Granted	11/20/2013	1590739	IE
1/29/2004	04706201.3	Granted	11/20/2013	1590739	IT
1/29/2004	04706201.3	Granted	11/20/2013	1590739	NL
1/29/2004	04706201.3	Granted	11/20/2013	1590739	ES
1/29/2004	04706201.3	Granted	11/20/2013	1590739	CH
1/29/2004	04706201.3	Granted	11/20/2013	1590739	GB
1/29/2004	13179105.5	Granted	1/27/2016	2664992	EP
1/29/2004	13179105.5	Granted	1/27/2016	602004048592-6	DE
1/29/2004	13179105.5	Granted	1/27/2016	2664992	FR
1/29/2004	13179105.5	Granted	1/27/2016	2664992	GB
12/10/2015	15199224.5	Application			EP

58. On information and belief, no other foreign applications or patents corresponding to the 486 Patent have been filed, abandoned, or rejected.

4. Licenses Related To The 486 Patent

59. As required by Commission Rule 210.12(a)(9)(iii), a list of currently-licensed entities of which MTL is aware is contained in the Declaration of James Baker. *See Ex. 18* [Confidential Declaration of James Baker], ¶ 8.

C. U.S. Patent No. 7,565,469

1. Identification And Ownership Of The 469 Patent

60. United States Patent No. 7,565,469, titled “Multimedia Card Interface Method, Computer Program Product And Apparatus,” issued on July 21, 2009, to inventors Kimmo Mylly and Jani Hyvönen. *See Ex. 3* [469 Patent]. The 469 Patent issued from Application No. 11/250,711 filed on October 14, 2005. *Id.*

61. The 469 Patent has 8 independent and 13 dependent claims. *Id.* MTL is asserting claim 19 of the 469 Patent in this Investigation.

62. The Asserted Claim of the 469 Patent is valid, enforceable, and currently in full force and effect until the expiration of the 469 Patent on November 17, 2024. MTL owns by assignment the entire right, title, and interest in and to the 469 Patent. On October 11, 2005, Kimmo Mylly assigned his interest in the application title “Multimedia Card Interface Method, Computer Program Product And Apparatus,” i.e., the 11/250,711 application executed by Kimmo Mylly on the same day, to Nokia Corporation. **Ex. 8** [Patent Assignment]; **Appx. C**. On October 12, 2005, Jani Hyvönen assigned his interest in the application title “Multimedia Card Interface Method, Computer Program Product And Apparatus,” i.e., the 11/250,711 application executed by Jani Hyvönen on the same day, to Nokia Corporation. **Ex. 9** [Patent Assignment]; **Ex. 10** [Patent Assignment]; **Appx. C**. On March 24, 2013, Nokia Corporation assigned its interest in the 469 Patent to Nokia Inc. **Ex. 12** [Patent Assignment] at frame 0385. On March 25, 2013, Nokia Inc.

assigned its interest in the 469 Patent to Memory Technologies LLC. **Ex. 13** [Patent Assignment] at frame 0048.

63. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by the prosecution history of the 469 Patent and three copies thereof. **Appx. C.** Pursuant to Commission rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the 469 Patent. **Appx. H.**

2. Non-Technical Description Of The 469 Patent

64. A flash memory device may be “busy” and unable to receive data for different reasons. For example, in the middle of a multiple block write in which the host device writes multiple blocks of data to flash memory, the flash memory’s buffers could be full and the memory may not be able to receive the next block; or, at the end of a write operation the buffers may be clear, but the flash memory could be unable to receive data because it is busy performing internal programming. Traditionally, the memory controller would issue a busy signal only to inform the host that the buffers were full (“buffer busy”). The memory controller would not issue a busy signal to inform the host that the memory card was busy programming. This was inefficient because it meant that the host would need to check via polling whether the memory card was “programming busy.”

65. The 469 Patent improves the efficiency of communications between a host device and a flash memory device (such as an SD card or microSD card) by enabling a single data line busy signal to convey different meanings at different times. For example, the change of state of the data line could have the first meaning of “buffer busy” between the blocks of the multiple block write operation and the second, different, meaning of “programming busy” at the end of a write operation. This improved efficiency because the host no longer needs to poll to determine if the flash memory is “programming busy.”

3. Foreign Counterparts To The 469 Patent

66. The foreign patents and patent applications corresponding to the 469 Patent are:

U.S. Patent No. 7,565,469					
Application Date	Application Number	Status	Patent Date	Patent No.	Country
11/3/2005	PCT/IB2005/003279	Expired			PTC
11/3/2005	05799469.1	Granted	8/18/2010	1820110	EP
11/3/2005	05799469.1	Granted	8/18/2010	1820110	BE
11/3/2005	05799469.1	Granted	8/18/2010	602005023049.1	DE
11/3/2005	05799469.1	Granted	8/18/2010	1820110	FR
11/3/2005	05799469.1	Granted	8/18/2010	1820110	GB
11/3/2005	05799469.1	Granted	8/18/2010	1820110	IT
11/3/2005	05799469.1	Granted	8/18/2010	1820110	NL
11/3/2005	2587681	Granted	1/10/2012	2587681	CA
11/26/2010	2723056	Granted	1/7/2014	2723056	CA
11/3/2005	2005305564	Granted	10/28/2010	2005305564	AU
11/3/2005	2007/04397	Granted	7/30/2008	2007/04397	ZA
11/3/2005	3423/DELNP/2007	Published			IN
11/3/2005	200580043855.1	Granted	8/12/2009	200580043855.1	CN
11/3/2005	PI0519042.8	Abandoned			BR
11/3/2005	10-2007-7013441	Granted	9/21/2009	10-0919159	KR
11/3/2005	MX/a/07/005812	Granted	11/26/2009	272157	MX
11/3/2005	200703546.2	Granted	5/30/2008	132357	SG
11/3/2005	2007-540733	Granted	5/13/2011	4739349	JP
11/3/2005	2007119309	Granted	4/20/2011	2416819	RU
5/23/2008	08105728.0	Granted	2/5/2010	1110971	HK

67. On information and belief, no other foreign applications or patents corresponding to the 469 Patent have been filed, abandoned, or rejected.

4. Licenses Related To The 469 Patent

68. As required by Commission Rule 210.12(a)(9)(iii), a list of currently-licensed entities of which MTL is aware is contained in the Declaration of James Baker. See Ex. 18 [Confidential Declaration of James Baker], ¶ 8.

D. U.S. Patent No. 9,063,850

1. Identification And Ownership Of The 850 Patent

69. United States Patent No. 9,063,850, titled “Extended Utilization Area For A Memory Device,” issued on June 23, 2015, to inventors Jani Hyvönen, Kimmo Mylly, Jussi Hakkinen, and Yevgen Gyl. *See Ex. 4* [850 Patent]. The 850 Patent issued from Application No. 13/951,169 filed on July 25, 2013. *Id.* The 850 Patent is a continuation of Application No. 12/039,672, which was filed on February 28, 2008, and became Patent No. 8,307,180. *Id.*

70. The 850 Patent has 6 independent and 48 dependent claims. *Id.* MTL is asserting claim 10 of the 850 Patent in this Investigation.

71. The Asserted Claim of the 850 Patent is valid, enforceable, and currently in full force and effect until the expiration of the 850 Patent on February 28, 2028. MTL owns by assignment the entire right, title, and interest in and to the 850 Patent. Between March 13 and March 17, 2008, Jani Hyvönen, Kimmo Mylly, Jussi Hakkinen, and Yevgen Gyl assigned their interests in Application No. 12/039,672 to Nokia Corporation. **Ex. 14** [Patent Assignment]. On March 24, 2013, Nokia Corporation assigned its interest in Patent No. 8,307,180 and all continuations thereof to Nokia Inc. **Ex. 15** [Patent Assignment] at frame 0858. On March 25, 2013, Nokia Inc. assigned its interest in Patent No. 8,307,180 and all continuations thereof to Memory Technologies LLC. **Ex. 16** [Patent Assignment] at frame 0934.

72. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by the prosecution history of the 850 Patent and three copies thereof. **Appx. D.** Pursuant to Commission rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the 850 Patent. **Appx. I.**

2. Non-Technical Description Of The 850 Patent

73. Different application programs may have different memory access characteristics. Prior to the invention claimed in the 850 Patent, a given memory device would often be optimized for the memory access characteristics of one kind of application. But this fixed optimization meant that if the memory device was placed in a different environment with different access demands, it would not perform optimally.

74. The invention of the 850 Patent permits the configuration of a memory device to suit the access needs of a host system using the memory device. The host can issue commands to the memory device reflecting the host's memory access needs. The memory device can receive those commands and organize itself in a manner suited to the host system's needs. The memory device does so by activating one of a number of access profiles inside the memory and configuring access to itself according to that access profile. As just one example, an access profile can optimize quick access to short, random memory locations in the memory device. This access profile could be activated when a host needs to write small chunks of data to random addresses.

3. Foreign Counterparts To The 850 Patent

75. The 850 Patent is related to the 180 Patent, and the foreign applications and patents corresponding to the 180 Patent are listed below.

4. Licenses Related To The 850 Patent

76. As required by Commission Rule 210.12(a)(9)(iii), a list of currently-licensed entities of which MTL is aware is contained in the Declaration of James Baker. *See Ex. 18* [Confidential Declaration of James Baker], ¶ 8.

E. U.S. Patent No. 8,307,180

1. Identification And Ownership Of The 180 Patent

77. United States Patent No. 8,307,180, titled “Extended Utilization Area For A Memory Device,” issued on November 16, 2012, to inventors Kimmo Mylly, Jani Hyvönen, Jussi Hakkinen, and Yevgen Gyl. *See Ex. 5*. The 180 Patent issued from Application No. 12/039,672 filed on February 28, 2008. *Id.*

78. The 180 Patent has 5 independent and 32 dependent claims. *Id.* MTL is asserting claims 17-19, 21, 22 and 27 of the 180 Patent in this Investigation.

79. The Asserted Claims of the 180 Patent are valid, enforceable, and currently in full force and effect until the expiration of the 180 Patent on February 28, 2028. MTL owns by assignment the entire right, title, and interest in and to the 180 Patent. Between March 13 and March 17, 2008, Jani Hyvönen, Kimmo Mylly, Jussi Hakkinen, and Yevgen Gyl assigned their interests in Application No. 12/039,672 to Nokia Corporation. **Ex. 11** [Patent Assignment]. On March 24, 2013, Nokia Corporation assigned its interest in Patent No. 8,307,180 to Nokia Inc. **Ex. 12** [Patent Assignment] at frame 0386. On March 25, 2013, Nokia Inc. assigned its interest in Patent No. 8,307,180 to Memory Technologies LLC. **Ex. 13** at 0049.

80. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by a copy of the prosecution history of the 180 Patent and three copies thereof. **Appx. E**. Pursuant to Commission rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the 180 Patent. **Appx. J**.

2. Non-Technical Description Of The 180 Patent

81. Different application programs may have different memory access characteristics. Prior to the invention claimed in the 180 Patent, a given memory device would often be optimized for the memory access characteristics of one kind of application. But this fixed optimization meant

that if the memory device was placed in a different environment with different access demands, it would not perform optimally.

82. The invention of the 180 Patent permits the configuration of a memory device to suit the access needs of a host system using the memory device. The host can issue commands to the memory device reflecting the host's memory access needs. The memory device can receive those commands and organize itself in a manner suited to the system's needs. The memory device does so by activating one of a number of access profiles inside the memory and configuring access to itself according to that access profile. As just one example, an access profile can optimize quick access to short, random memory locations in the memory device. This access profile could be activated when a host needs to write small chunks of data to random addresses.

3. Foreign Counterparts To The 180 Patent

83. The foreign patents and patent applications corresponding to the 180 Patent are:

U.S. Patent No. 8,307,180					
Application Date	Application Number	Status	Patent Date	Patent No.	Country
1/30/2009	PCT/FI2009/050083	Expired			PTC
1/30/2009	200980106241.1	Granted	3/25/2015	ZL200980106241.1	CN
3/2/2015	201510093389.3	Published			CN
1/30/2009	10-2010-7021534	Granted	6/26/2013	10-1281326	KR
1/30/2009	10-2013-7002338	Granted	11/27/2014	10-1468824	KR
1/30/2009	09715221.9	Published			EP
1/30/2009	2010-548134	Granted	12/19/2014	5663720	JP
1/30/2009	2013-103695	Rejected			JP
5/14/2015	2015-099731	Application			JP
11/4/2015	15110890.3	Published			HK

84. On information and belief, no other foreign applications or patents corresponding to the 180 Patent have been filed, abandoned, or rejected.

4. Licenses Related To The 180 Patent

85. As required by Commission Rule 210.12(a)(9)(iii), a list of currently-licensed entities of which MTL is aware is contained in the Declaration of James Baker. *See Ex. 18* [Confidential Declaration of James Baker], ¶ 8.

VII. UNLAWFUL AND UNFAIR ACTS OF PROPOSED RESPONDENTS: PATENT INFRINGEMENT

86. The Proposed SanDisk Respondents have engaged in unfair trade practices, including the sale for importation, importation, and sale within the United States after importation of certain Accused Products that infringe the Asserted Claims of the Asserted Patents.

A. SanDisk's Imported SD and microSD Cards

87. As detailed below for each patent, SanDisk's accused SD and microSD Cards infringe claims of each of the below listed patents. The Accused Products are imported into the United States and are sold in the United States, as detailed further below.

B. Infringement of U.S. Patent No. RE45,542

88. On information and belief, the Accused Products include the SanDisk SD and microSD Cards compliant with SD Specification version 3.00 or higher with maximum current consumption greater than 200ma, a components thereof, and infringe claim 38 of the 542 Patent, either literally or under the doctrine of equivalents. The Accused Products are sold for importation, imported, and/or sold within the United States after importation by SanDisk (along with the other SanDisk Respondents). On information and belief and for purposes of this Complaint, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A) are representative of the Accused Products that infringe the 542 Patent.

89. On information and belief, SanDisk (along with the other SanDisk Respondents) violates Section 337 through the importation into the United States, the sale for importation, or the sale within the United States after importation of SD and microSD Cards, which infringe directly or indirectly one or more claims of the 542 Patent. The Accused Products that SanDisk (along with the other SanDisk Respondents) imports, sells for importation, or sells within the United States after importation meet the limitations of one or more claims of the 542 Patent. SanDisk (along with the other SanDisk Respondents) directly infringes one or more claims of the 542 Patent through its manufacture or making, using, offering to sell, selling, or importation into the United States of one of more Accused Products.

90. On information and belief, SanDisk (along with the other SanDisk Respondents) knowingly and intentionally induces users of one or more of the Accused Products, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents to directly infringe one or more claims of the 542 Patent by encouraging, instructing, and/or aiding and abetting one or more persons or entities to make, use, offer to sell, sell, or import the Accused Products or components thereof. SanDisk (along with the other SanDisk Respondents) itself makes, imports, and sells the Accused Products, or it induces another entity to make, import, and sell the Accused Products. SanDisk (along with the other SanDisk Respondents) advertises the Accused Products and encourages the sale and offer for sale of its products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased. *See, e.g., Ex. 77* [Where to Buy SanDisk Worldwide]; *Ex. 78* [SanDisk Extreme PRO SD UHS-I Memory Card], *Ex. 79* [SanDisk Extreme Plus microSD UHS-I Card]. SanDisk (along with the other SanDisk Respondents) assists users in using the Accused Products, including through providing answers to frequently asked questions, providing means for users to submit

questions, and providing a “live chat” option for users to chat with a member of SanDisk’s support team. **Ex. 41** [SanDisk Global Customer Care]. On information and belief, SanDisk (along with the other SanDisk Respondents) was aware of or acted with willful blindness to the existence of the 542 Patent and the infringement of the 542 Patent by users, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents, at least as a result of MTL’s multiple letters to SanDisk. **Ex. 48** [November 16, 2015, letter]; **Ex. 49** [April 15, 2015, letter]; **Ex. 69** [July 28, 2015, letter]; **Ex. 70** [August 23, 2015, letter].

91. Pursuant to Commission Rule 210.12(a)(9)(viii), a claim chart applying each element of the asserted claim of the 542 Patent to the representative Accused Products is attached to this Complaint as **Exhibit 80**. The standards referenced in this claim chart can be found in **Exhibits 85-86**.⁷

C. Infringement of U.S. Patent No. RE45,486

92. On information and belief, the Accused Products include SanDisk High Capacity (HC) and Extended Capacity (XC) SD and microSD Cards compliant with SD Specification Version 2.00 or higher, and components thereof, and infringe claims 6, 9, 10, 22, 23, 26, 27 of the 486 Patent, either literally or under the doctrine of equivalents. The Accused Products are sold for importation, imported, and/or sold within the United States after importation by SanDisk (along with the other SanDisk Respondents). On information and belief and for purposes of this Complaint, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A) are representative of the Accused Products that infringe the 486 Patent.

⁷ **Exhibit 86** is available at forums.parallax.com/discussion/download/100220&d=. **Exhibit 85** is available at https://members.sdcard.org/downloads/pls/simplified_specs/part1_410.pdf.

93. On information and belief, SanDisk (along with the other SanDisk Respondents) violates Section 337 through the importation into the United States, the sale for importation, or the sale within the United States after importation of SD and microSD Cards, which infringe directly or indirectly one or more claims of the 486 Patent. The Accused Products that SanDisk (along with the other SanDisk Respondents) imports, sells for importation, sells within the United States after importation meet the limitations of one or more claims of the 486 Patent. SanDisk (along with the other SanDisk Respondents) directly infringes one or more claims of the 486 Patent through its manufacture or making, using, offering to sell, selling, or importation into the United States of one or more Accused Products.

94. On information and belief, SanDisk (along with the other SanDisk Respondents) knowingly and intentionally induces users of one or more of the Accused Products, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents to directly infringe one or more claims of the 486 Patent by encouraging, instructing, and/or aiding and abetting one or more persons or entities to make, use, offer to sell, sell, or import the Accused Products or components thereof. SanDisk (along with the other SanDisk Respondents) itself makes, imports, and sells the Accused Products, or it induces another entity to make, import, and sell the Accused Products. SanDisk (along with the other SanDisk Respondents) advertises the Accused Products and encourages the sale and offer for sale of its products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased. *See, e.g.,* **Ex. 77** [Where to Buy SanDisk Worldwide], **Ex. 78** [SanDisk Extreme PRO SD UHS-I Memory Card], **Ex. 79** [SanDisk Extreme Plus microSD UHS-I Card]. SanDisk (along with the other SanDisk Respondents) assists users in using the Accused Products, including through providing answers to frequently asked questions, providing means for users to submit

questions, and providing a “live chat” option for users to chat with a member of SanDisk’s support team. **Ex. 41** [SanDisk Global Customer Care]. On information and belief, SanDisk (along with the other SanDisk Respondents) was aware of or acted with willful blindness to the existence of the 486 Patent and the infringement of the 486 Patent by users, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents, at least as a result of MTL’s multiple letters to SanDisk. **Ex. 48** [November 16, 2015, letter]; **Ex. 49** [April 15, 2015, letter]; **Ex. 69** [July 28, 2015, letter]; **Ex. 70** [August 23, 2015, letter].

95. Pursuant to Commission Rule 210.12(a)(9)(viii), a claim chart applying each element of the asserted independent claim of the 486 Patent to the representative Accused Products is attached to this Complaint as **Exhibit 81**. The standards referenced in this claim chart can be found in **Exhibits 85-87**.⁸

D. Infringement of U.S. Patent No. 7,565,469

96. On information and belief, the Accused Products include SanDisk SD and microSD Cards compliant with SD Specification version 3.00 or higher with CMD23 (SET_BLOCK_COUNT) functionality, and components thereof, and infringe claim 19 of the 469 Patent, either literally or under the doctrine of equivalents. These Accused Products are sold for importation, imported, and/or sold within the United States after importation by SanDisk (along with the other SanDisk Respondents). On information and belief and for purposes of this Complaint, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A) are representative of the Accused Products that infringe the 469 Patent.

⁸ **Exhibit 87** is available at http://users.ece.utexas.edu/~valvano/EE345M/SD_Physical_Layer_Spec.pdf.

97. On information and belief, SanDisk (along with the other SanDisk Respondents) violates Section 337 through the importation into the United States, the sale for importation, or the sale within the United States after importation of SD and microSD Cards, which infringe directly or indirectly one or more claims of the 469 Patent. The Accused Products that SanDisk (along with the other SanDisk Respondents) imports, sells for importation, sells within the United States after importation meet the limitations of one or more claims of the 469 Patent. SanDisk (along with the other SanDisk Respondents) directly infringes one or more claims of the 469 Patent through its manufacture or making, using, offering to sell, selling, or importation into the United States of one or more Accused Product.

98. On information and belief, SanDisk (along with the other SanDisk Respondents) knowingly and intentionally induces users of one or more of the Accused Products, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents to directly infringe one or more claims of the 469 Patent by encouraging, instructing, and/or aiding and abetting one or more persons or entities to make, use, offer to sell, sell, or import the Accused Products or components thereof. SanDisk (along with the other SanDisk Respondents) itself makes, imports, and sells the Accused Products, or it induces another entity to make, import, and sell the Accused Products. SanDisk (along with the other SanDisk Respondents) advertises the Accused Products and encourages the sale and offer for sale of its products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased. *See, e.g., Ex. 77* [Where to Buy SanDisk Worldwide]; **Ex. 78** [SanDisk Extreme PRO SD UHS-I Memory Card]; **Ex. 79** [SanDisk Extreme Plus microSD UHS-I Card]. SanDisk (along with the other SanDisk Respondents) assists users in using the Accused Products, including through providing answers to frequently asked questions, providing means for users to submit

questions, and providing a “live chat” option for users to chat with a member of SanDisk’s support team. **Ex. 41** [SanDisk Global Customer Care]. On information and belief, SanDisk (along with the other SanDisk Respondents) was aware of or acted with willful blindness to the existence of the 469 Patent and the infringement of the 469 Patent by users, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents, at least as a result of MTL’s multiple letters to SanDisk. **Ex. 48** [November 16, 2015, letter]; **Ex. 49** [April 15, 2015, letter]; **Ex. 69** [July 28, 2015, letter]; **Ex. 70** [August 23, 2015, letter].

99. Pursuant to Commission Rule 210.12(a)(9)(viii), a claim chart applying each element of the asserted independent claim of the 469 Patent to the representative Accused Products is attached to this Complaint as **Exhibit 82**. The standards referenced in this claim chart can be found in **Exhibits 85-86**.

E. Infringement of U.S. Patent No. 9,063,850

100. On information and belief, the Accused Products include the SanDisk SD and microSD Cards compliant with SD Specification version 3.00 or higher with Speed Class Control Command Functionality, and components thereof, and infringe claim 10 of the 850 Patent, either literally or under the doctrine of equivalents. The Accused Products are sold for importation, imported, and/or sold within the United States after importation by SanDisk (along with the other SanDisk Respondents). On information and belief and for purposes of this Complaint, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A) are representative of the Accused Products that infringe the 850 Patent.

101. On information and belief, SanDisk (along with the other SanDisk Respondents) violates Section 337 through the importation into the United States, the sale for importation, or the sale within the United States after importation of SD and microSD Cards, which infringe directly

or indirectly one or more claims of the 850 Patent. The Accused Products that SanDisk (along with the other SanDisk Respondents) imports, sells for importation, sells within the United States after importation meet the limitations of one or more claims of the 850 Patent. SanDisk (along with the other SanDisk Respondents) directly infringes one or more claims of the 850 Patent through its manufacture or making, using, offering to sell, selling, or importation into the United States of one or more Accused Products.

102. On information and belief, SanDisk (along with the other SanDisk Respondents) knowingly and intentionally induces users of one or more of the Accused Products, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents to directly infringe one or more claims of the 850 Patent by encouraging, instructing, and/or aiding and abetting one or more persons or entities to make, use, offer to sell, sell, or import the Accused Products or components thereof. SanDisk (along with the other SanDisk Respondents) itself makes, imports, and sells the Accused Products, or it induces another entity to make, import, and sell the Accused Products. SanDisk (along with the other SanDisk Respondents) advertises the Accused Products and encourages the sale and offer for sale of its products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased. *See, e.g., Ex. 77* [Where to Buy SanDisk Worldwide]; *Ex. 78* [SanDisk Extreme PRO SD UHS-I Memory Card]; *Ex. 79* [SanDisk Extreme Plus microSD UHS-I Card]. SanDisk (along with the other SanDisk Respondents) assists users in using the Accused Products, including through providing answers to frequently asked questions, providing means for users to submit questions, and providing a “live chat” option for users to chat with a member of SanDisk’s support team. *Ex. 41* [SanDisk Global Customer Care]. On information and belief, SanDisk (along with the other SanDisk Respondents) was aware of or acted with willful blindness to the existence of

the 850 Patent and the infringement of the 850 Patent by users, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents, at least as a result of MTL's multiple letters to SanDisk. **Ex. 48** [November 16, 2015, letter]; **Ex. 49** [April 15, 2015, letter]; **Ex. 69** [July 28, 2015, letter]; **Ex. 70** [August 23, 2015, letter].

103. Pursuant to Commission Rule 210.12(a)(9)(viii), a claim chart applying each element of the asserted independent claim of the 850 Patent to the representative Accused Products is attached to this Complaint as **Exhibit 83**. The standards referenced in this claim chart can be found in **Exhibits 85-86**.

F. Infringement of U.S. Patent No. 8,307,180

104. On information and belief, the Accused Products include the SanDisk SD and microSD Cards compliant with SD Specification version 3.00 or higher with Speed Class Control Command Functionality, and components thereof, and infringe claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents. These Accused Products are sold for importation, imported, and/or sold within the United States after importation by SanDisk (along with the other SanDisk Respondents). On information and belief and for purposes of this Complaint, the SanDisk Extreme Pro UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A) are representative of the Accused Products that infringe the 180 Patent.

105. On information and belief, SanDisk (along with the other SanDisk Respondents) violates Section 337 through the importation into the United States, the sale for importation, or the sale within the United States after importation of SD and microSD Cards, which infringe directly or indirectly one or more claims of the 180 Patent. The Accused Products that SanDisk (along with the other SanDisk Respondents) imports, sells for importation, sells within the United States after importation meet the limitations of one or more claims of the 180 Patent. SanDisk (along with the

other SanDisk Respondents) directly infringes one or more claims of the 180 Patent through its manufacture or making, using, offering to sell, selling, or importation into the United States of one or more Accused Products.

106. On information and belief, SanDisk (along with the other SanDisk Respondents) knowingly and intentionally induces users of one or more of the Accused Products, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents to directly infringe one or more claims of the 180 Patent by encouraging, instructing, and/or aiding and abetting one or more persons or entities to make, use, offer to sell, sell, or import the Accused Products or components thereof. SanDisk (along with the other SanDisk Respondents) itself makes, imports, and sells the Accused Products, or it induces another entity to make, import, and sell the Accused Products. SanDisk (along with the other SanDisk Respondents) advertises the Accused Products and encourages the sale and offer for sale of its products by other entities by listing stores where SanDisk products, including specifically the Accused Products, can be purchased. *See, e.g., Ex. 77* [Where to Buy SanDisk Worldwide]; *Ex. 78* [SanDisk Extreme PRO SD UHS-I Memory Card]; *Ex. 79* [SanDisk Extreme Plus microSD UHS-I Card]. SanDisk (along with the other SanDisk Respondents) assists users in using the Accused Products, including through providing answers to frequently asked questions, providing means for users to submit questions, and providing a “live chat” option for users to chat with a member of SanDisk’s support team. *Ex. 41* [SanDisk Global Customer Care]. On information and belief, SanDisk (along with the other SanDisk Respondents) was aware of or acted with willful blindness to the existence of the 180 Patent and the infringement of the 180 Patent by users, customers, affiliates, parents, subsidiaries, third parties, importers, sellers, and/or one more of the SanDisk Respondents, at least

as a result of MTL's multiple letters to SanDisk. **Ex. 48** [November 16, 2015, letter]; **Ex. 49** [April 15, 2015, letter]; **Ex. 69** [July 28, 2015, letter]; **Ex. 70** [August 23, 2015, letter].

107. Pursuant to Commission Rule 210.12(a)(9)(viii), a claim chart applying each element of the asserted independent claim of the 180 Patent to the representative Accused Products is attached to this Complaint as **Exhibit 84**. The standards referenced in this claim chart can be found in **Exhibits 85-86**.

VIII. SPECIFIC INSTANCES OF UNFAIR IMPORTATION AND SALE

108. On information and belief, the Accused Products are manufactured and assembled at foreign facilities by the SanDisk Respondents. *See* **Ex. 36** [SanDisk August 2, 2006, Press Release] at 1; **Ex. 38** [Business News] at 2; **Ex. 40** [SanDisk September 27, 2007, Press Release] at 1-2. On information and belief, the Accused Products are also available for purchase in the United States. *See, e.g.,* **Ex. 88** [Welcome to the SanDisk Store]. On information and belief, because the Accused Products are manufactured overseas and sold in the United States, the Accused Products are sold for importation into the United States, imported into the United States, and/or sold within the United States after importation by the SanDisk Respondents.

109. For example, as shown on the SanDisk Store U.S. Website, the representative products for each Asserted Patent are available within the United States. *See* **Ex. 88** [Welcome to the SanDisk Store]. In addition, SanDisk's website lists numerous physical stores located within the United States, as well as online stores, where the SanDisk Respondents' products may be purchased generally, and specifically where the representative products can be purchased. *See, e.g.,* **Ex. 77** [Where to Buy SanDisk Worldwide]; **Ex. 78** [SanDisk Extreme PRO SD UHS-I Memory Card]; **Ex. 79** [SanDisk Extreme Plus microSD UHS-I Card].

110. Additionally, MTL has purchased within the United States the representative Accused Products from SanDisk. The representative Accused Products—the SanDisk Extreme Pro

UHS-I SDXC Cards (SDSDXP-128G-A46) and the SanDisk Extreme Plus microSDHC Cards (SDSDQX-016G-A46A)—were purchased from SanDisk’s U.S. Online Store and delivered to the offices of MTL’s counsel in this investigation, Tensegrity Law Group, 555 Twin Dolphin Drive, Suite 650, Redwood City, CA 94065. The photographs in **Exhibit 89** show the shipping label on the box that was received from SanDisk and the packing slips listing the SKUs of the representative products (SDSDXP-128G-A46 and SDSDQX-016G-A46A). **Ex. 89** at 2, 8.

111. The representative products are also imported into the United States. As shown in the photographs in **Exhibit 90**, each representative card and its corresponding packaging contained text indicating that such card was manufactured in China. Because the representative products are manufactured overseas and sold in the United States, including by SanDisk itself and by third party retailers, the publicly available evidence shows that SanDisk (along with the other SanDisk Respondents) sells for importation, imports, and sells after importation the representative products.

IX. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS

112. On information and belief, the Accused Products fall within at least the following Harmonized Tariff Schedule of the United States item numbers: 8523.51.0000, which provides for “solid-state non-volatile storage devices,” “(for example, ‘flash memory cards’ or ‘flash electronic storage cards’);” and 8542.32.0070, which provides for memories other than DRAM, SRAM, EEPROM, and EPROM.

113. This HTS identification is for illustrative purposes only in compliance with the Commission Rules and is not intended to restrict the scope of the investigation.

X. RELATED LITIGATION

114. Contemporaneously with the filing of this Complaint, MTL is filing an action against certain SanDisk Respondents in the United States District Court for the Central District of California, alleging infringement of the Asserted Patents.

115. On information and belief and pursuant to Commission rule 210.12(a)(5), there has been no other court or agency litigation involving the alleged unfair methods of competition and unfair acts, or the subject matter thereof.

XI. THE DOMESTIC INDUSTRY

116. With respect to the Asserted Patents and additionally Claim 13 of the 850 Patent and Claim 11 of the 486 Patent, a domestic industry in the United States exists as defined by 19 U.S.C. § 1337(a)(3)(A)-(C), comprising significant investments in plant and equipment; in the employment of labor and capital; and/or in the substantial exploitation of the Asserted Patents through engineering, research and development, and/or licensing based on (A) MTL's domestic industry in licensing the Asserted Patents and (B) MTL's licensees' domestic industry in covered products.

A. Overview of MTL's Licensees And Covered Products

1. [REDACTED]

117. MTL's licensee [REDACTED]

[REDACTED]. On information and belief, [REDACTED] products are covered by the Asserted Patents as follows:

- [REDACTED] eMMC memory compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher is covered by claim 38 of the 542 Patent, claims 6, 9-11, 22, 23, 26, and 27 of the 486 Patent, and claim 19 of the 469 Patent, either literally or under the doctrine of equivalents; and
- [REDACTED] eMMC memory compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher is covered by claims 10 and 13 of the 850 Patent and one or more of claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents.

See, e.g., Ex. 91; Ex. 92.

118. Exhibits 93-97 are claim charts demonstrating that exemplary [REDACTED] eMMC products⁹ meet each limitation of certain claims of the Asserted Patents. Further investigation may reveal that additional claims of these patents are met by [REDACTED] products developed, manufactured, sold, and used in the United States.

119. [REDACTED]

[REDACTED] On information and belief, and for reasons discussed below, a substantial portion of that revenue is attributable to covered products that are sold directly or indirectly in the United States.

2. Samsung

120. MTL's licensee Samsung manufactures and sells substantial numbers of covered eMMC and eMCP products in the United States. On information and belief, Samsung's products are covered by the Asserted Patents as follows:

- Samsung eMMC memory compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher is covered by claim 38 of the 542 Patent, claims 6, 9-11, 22, 23, 26, and 27 of the 486 Patent, and claim 19 of the 469 Patent, either literally or under the doctrine of equivalents;

⁹ eMCP products contain eMMC memory, as described above, and so the licensees' eMCP products meet the limitations of claims of the Asserted Patents for the same reasons as the licensees' eMMC products.

¹⁰ For all licensees, the eMMC-related revenue includes all of a licensee's revenue from eMMC and 55% of a licensee's revenue from eMCP revenue. As described above, eMCP combines eMMC and LPDDR memory into a single chip package. On information and belief, 55% of the revenue from eMCP is eMMC-related revenue.

- Samsung eMMC memory compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher is covered by claims 10 and 13 of the 850 Patent and one or more of claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents.

See, e.g., Ex. 98.

121. Confidential **Exhibits 99-103** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed devices sold by MTL's licensee Samsung.

122. In 2015, Samsung was estimated to have received approximately [REDACTED] in eMMC-related revenue for products sold worldwide. **Ex. 46** [20151210 Gartner Preliminary Mobile Memory Data] at 4. On information and belief, and for reasons discussed below, a substantial portion of that revenue is attributable to covered products that are sold directly or indirectly in the United States.

3. Toshiba

123. MTL's licensee Toshiba manufactures and sells substantial numbers of covered eMMC, eMCP, and SD and microSD Card products in the United States. On information and belief, Toshiba's products are covered by the Asserted Patents as follows:

- Toshiba eMMC memory compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher is covered by claim 38 of the 542 Patent, claims 6, 9-11, 22, 23, 26, and 27 of the 486 Patent, and claim 19 of the 469 Patent, either literally or under the doctrine of equivalents;
- Toshiba eMMC memory compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher is covered by claims 10 and 13 of the 850 Patent and one or more

of claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents;

- Toshiba SD and microSD Cards compliant with SD Specification version 3.00 or higher with maximum current consumption greater than 200mA are covered by claim 38 of the 542 Patent, either literally or under the doctrine of equivalents;
- Toshiba High Capacity (HC) and Extended Capacity SD and microSD Cards compliant with SD Specification version 2.00 or higher are covered by claims 6, 9, 10, 22, 23, 26, and 27 of the 486 Patent, either literally or under the doctrine of equivalents;
- Toshiba SD and microSD Cards compliant with SD Specification version 3.00 or higher with CMD23 (SET_BLOCK_COUNT) functionality are covered by claim 19 of the 469 Patent, either literally or under the doctrine of equivalents;
- Toshiba SD and microSD Cards compliant with SD Specification version 3.00 or higher with Speed Class Control Command Functionality are covered by claims 10 and 13 of the 850 Patent and one or more of claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents.

See, e.g., Ex. 104 [Toshiba Flash Memory Semiconductor Catalog Mar. 2016].

124. **Exhibits 105-109** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed eMMC devices sold by MTL's licensee Toshiba. **Exhibits 110-114** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed SD and microSD Cards sold by MTL's licensee Toshiba.

125. In 2015, Toshiba was estimated to have received approximately [REDACTED] in eMMC-related revenue for products sold worldwide. **Ex. 46** [20151210 Gartner Preliminary

Mobile Memory Data] at 4. On information and belief, and for reasons discussed below, a substantial portion of that revenue is attributable to covered products that are sold directly or indirectly in the United States.

126. In 2013, Toshiba was estimated to have sold approximately [REDACTED] worth of SD Card products worldwide. **Ex. 43** [Market Share: Flash Cards and USB Flash Drives, Worldwide, 2013] at 2. Approximately [REDACTED] of the worldwide SD Card market has been attributed to sales in the United States. *Id.* at 8. Applying this estimate to Toshiba's SD card revenue yields approximate revenue for SD Card Products in the United States in excess of [REDACTED] for 2013. Toshiba signed a license with MTL in 2016 and it is expected that discovery will reveal that a similarly significant number of Toshiba SD Card products are covered products under that license.

4. SK Hynix

127. MTL's licensee SK Hynix manufactures and sells substantial numbers of covered eMMC and eMCP products in the United States. On information and belief, SK Hynix's products are covered by the Asserted Patents as follows:

- SK Hynix eMMC memory compliant with the JEDEC eMMC 4.41 (JESD84-A441) standard or higher is covered by claim 38 of the 542 Patent, claims 6, 9-11, 22, 23, 26, and 27 of the 486 Patent, and claim 19 of the 469 Patent, either literally or under the doctrine of equivalents;
- SK Hynix eMMC memory compliant with the JEDEC eMMC 4.51 (JESD84-B451) standard or higher is covered by claims 10 and 13 of the 850 Patent and one or more of claims 17, 18, 19, 21, 22, and 27 of the 180 Patent, either literally or under the doctrine of equivalents;

See, e.g., Ex. 115 [SK Hynix, Products, eMMC]; **Ex. 160** [SK Hynix, Q4' 2016 Databook] at 6.

128. Confidential **Exhibits 116-120** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed devices sold by MTL's licensee SK Hynix.

129. In 2015, SK Hynix was estimated to have received approximately [REDACTED] in eMMC-related revenue for products sold worldwide. **Ex. 46** [20151210 Gartner Preliminary Mobile Memory Data] at 4. On information and belief, and for reasons discussed below, a substantial portion of that revenue is attributable to covered products that are sold directly or indirectly in the United States.

B. MTL's Domestic Industry in Licensing the Asserted Patents

130. Pursuant to Section 337(a)(2) and (a)(3)(C), a domestic industry exists by virtue of MTL's substantial investments in the exploitation of the Asserted Patents through licensing.

131. MTL has made and continues to make a substantial domestic investment in licensing the Asserted Patents. *See Ex. 18* [Confidential Declaration of James Baker]. MTL's investment in the United States from the time it acquired the Asserted Patents to the present, exclusive of the cost of acquisition and cost of revenue, is already in the millions of dollars. *Id.*, ¶ 10. MTL's United States employees have successfully negotiated royalty-bearing licensing agreements to the Asserted Patents with significant players in the flash memory market, each of which has generated significant royalties. *Id.*, ¶¶ 5-7. Taken together, MTL's consummated license agreements have commanded in excess of [REDACTED] in revenue in addition to ongoing royalties. *Id.* MTL has invested approximately [REDACTED] in its licensing efforts related to this portfolio, which is a significant investment over three and a half years. *Id.*, ¶¶ 6, 34. A comparison of MTL's licensing revenue and MTL's investment shows a high return on investment, which reflects the substantial nature of the domestic licensing activity. *Id.*, ¶¶ 6, 34.

132. Moreover, MTL's licensees account for a substantial portion of the worldwide flash market. [REDACTED]

[REDACTED] This demonstrates the recognition within the flash memory industry of the importance of MTL's patents, as well as the substantial nature of MTL's licensing program.

133. MTL's license agreements are portfolio license agreements as to which a significant portion of MTL's licensing efforts were focused on the Asserted Patents, and as to which a significant portion of revenue and value associated with the licenses is attributable to the Asserted Patents. Ex. 18, ¶¶ 35-60. For example, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *Id.* In some cases, MTL provided [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *E.g., id.*, ¶¶ 41, 47, 57, 59. While MTL's portfolio is global, the Asserted Patents and their relatives and families played [REDACTED]

[REDACTED] with the result that a substantial portion of the revenue associated with these licenses is attributable to the Asserted Patents. *Id.*, ¶¶ 35-60.

134. Further, because of the relative size of MTL's patent portfolio and the coverage areas of patents and patent families in that portfolio, a significant portion of the revenue associated with the MTL licenses is attributable to the licensing of the Asserted Patents, and sufficient to reflect that MTL's investment in licensing the Asserted Patents in the United States is substantial. *Id.*, ¶¶ 4, 6, 61-62. The portfolio containing the Asserted Patents contains approximately 120 issued

patents that are all directed to memory. Even if each patent in the portfolio were assumed to have received an equal investment, the investment per Asserted Patent would still be significant at approximately [REDACTED]. *Id.*, ¶¶ 35-60, 62. However, the investment has not been equal, because [REDACTED].

135. In support of its substantial licensing efforts, MTL's domestic licensing investments include, for example, a substantial investment in domestic employee salaries and benefits, domestic office space, domestic office telecommunication and computer supplies, and other domestic office expenses, as well as other expenses such as domestic travel to meet with potential licensees and market research. *See id.*, ¶¶ 10-34. Each of these investments was allocated based on the amount of licensing work performed in the United States.¹¹ *Id.*

136. The employees who performed work to license the portfolio containing the Asserted Patents performed a number of tasks in the United States that were necessary to carry out the licensing program, such as patent portfolio analysis, financial and technical analysis, patent infringement analysis and documentation (including claim charts used in licensing discussions), creation of licensing proposals, technical discussions and license negotiations with prospective licensees when those discussions were in the United States, and preparation for technical discussions and license negotiations. *Id.*, ¶ 10. These employees in carrying out these efforts made the Asserted Patents a focal point of the licensing program. *Id.*, ¶¶ 35-60.

137. The success of MTL's licensing business, as measured in the number of licenses and resulting revenues and other benefits, has required substantial domestic investments by MTL and has led to continued investment to establish an even more extensive domestic licensing

¹¹ In some instances, investments were directly relevant to the licensing of the relevant portfolio, such as domestic travel to licensing meetings.

business involving MTL's intellectual property, including the Asserted Patents. *See id.*, ¶ 8. MTL is in ongoing discussions with potential licensees in addition to SanDisk, and [REDACTED]

[REDACTED] *E.g. id.*, ¶¶ 8, 56-59.

138. [REDACTED]

[REDACTED] As noted above, with respect to SD Cards, approximately [REDACTED] of revenue worldwide is associated with U.S. sales. Ex. 43 [Market Share: Flash Cards and USB Flash Drives, Worldwide, 2013] at 8 (SD technology). MTL expects that discovery will reveal that a substantial percentage of eMMC products are sold directly or indirectly into the United States, with the result that the revenue attributable to covered eMMC products domestically will be in the

[REDACTED] For example, SK Hynix reported that 40% of its revenue in 2015 and 27% of its revenue in 2016 was attributable to the United States. Ex. 121 [Condensed Consolidated Interim Financial Statements] at 15. Applying those percentages to SK Hynix's eMMC revenue implies [REDACTED] of domestic revenue for covered products for SK Hynix alone. *See* Ex. 46 [20151210 Gartner Preliminary Mobile Memory Data] at 4. As another example, [REDACTED]

[REDACTED] As another example, \$8.9 billion, or 18%, of Toshiba's net sales were to customers located in North America. Ex. 123 [2016 Annual Report] at 79. While

some sales may be in North America and outside of the United States, given the size of the U.S. market and the substantial U.S. sales of Toshiba's competitors, on information and belief, the United States makes up a significant portion of these sales. Applying that percentage to Toshiba's eMMC revenue would imply [REDACTED] of domestic revenue for covered products for Toshiba. Ex. 46 [20151210 Gartner Preliminary Mobile Memory Data] at 4. As another example, 30% of Samsung's revenue was from America in 2013. Ex. 124 [Financial Highlights] at 2. Applying that percentage to Samsung's eMMC revenue would imply [REDACTED] of domestic revenue for covered products for Samsung. Ex. 46 [20151210 Gartner Preliminary Mobile Memory Data] at 4. Based on the publicly available information, it is apparent that there is a substantial number of covered products in the United States, and discovery will reveal a more precise measure of the size of the domestic market for covered products for all licensees.

139. In sum, there is a nexus between MTL's substantial investments in the United States in licensing activities and the Asserted Patents.

140. Based at least upon the foregoing allegations, and pursuant to 19 U.S.C. § 1337(a)(3)(C), MTL's substantial investment in the exploitation of the Asserted Patents through licensing constitutes a domestic industry.

A. MTL's Licensees' Domestic Industry In Covered Products

141. Pursuant to Section 19 U.S.C. § 1337(a)(3)(A)(B), and/or (C), the activities of MTL's licensees, [REDACTED] and Samsung, Toshiba, and SK Hynix constitute a domestic industry.

1. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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2. Samsung's Domestic Industry Activities

152. On information and belief, MTL's licensee, Samsung, has made a significant investment in plant and equipment, and/or in the employment of labor or capital, and/or has made a substantial investment in the exploitation of the Asserted Patents through engineering and research and development in the United States, as described by publicly available information attached hereto as **Exhibits 98, 136-142**. MTL expects that discovery will further show that one or more of the domestic industry requirements of subparagraphs 337(a)(3)(A), 337(a)(3)(B), and 337(a)(3)(C) are independently satisfied by Samsung's domestic activities and investments.

153. On information and belief, MTL's licensee Samsung has made significant investments in plant and equipment with respect to articles protected by the Asserted Patents. Samsung Austin Semiconductor has over 2.3 million square feet of space in Austin, Texas. **Ex. 136** [Samsung Electronics, US Divisions]; **Ex. 137** [Samsung Semiconductor, Location]. Samsung has invested approximately \$15 billion into its Austin campus, making it "one of the largest direct foreign investments in United States history." **Ex. 136** [Samsung Electronics, US Divisions] at 1. Samsung built a 1.6 million square foot fabrication plant at its Austin facility to manufacture 12-inch NAND flash wafers. **Ex. 138** [Computing News] at 1-2. When this fabrication plant opened in June 2007 it was one of the largest buildings in Austin and was the largest single semiconductor facility in the United States. *Id.* This flash fabrication plant cost \$3.5 billion, and was "the largest single foreign investment in Texas and one of the largest in the United States." *Id.* Samsung then expanded its fabrication of these 12-inch wafers in Austin by closing a \$1.4 billion 8-inch DRAM

fabrication plant at its Austin facility in 2009, refurbished it, and using it for 12-inch wafer production. *Id.* at 1-2, **Ex. 139** [Samsung Austin Semiconductor Begins \$3.6B Expansion for Advanced Logic Chips] at 1. Through 2010, Samsung had invested a total of \$5.6 billion on its Austin facilities, which focused at that point on manufacturing 12-inch NAND flash wafers. **Ex. 139** [Samsung Austin Semiconductor Begins \$3.6B Expansion for Advanced Logic Chips] at 2.

154. On information and belief, Samsung's Austin facility produces covered eMMC products. eMMC is a type of NAND flash memory that is used in mobile devices. **Ex. 159** [Samsung eMMC Brochure] at 1; **Ex. 98** [Samsung Semiconductor, Flash Storage Products] at 1 in printout of <http://www.samsung.com/semiconductor/products/flash-storage/emmc/>. When the Austin NAND facility opened, it was expected that it would produce NAND memory for use in computers and mobile devices. **Ex. 138** [Computing News] at 2. More recent reports indicate that this facility ultimately produced memory primarily for mobile devices and digital cameras. **Ex. 140** [Newelectronics] at 1. Also, the first product produced at this facility was a 16 Gb NAND flash chip, which is the same size as eMMC, and eMMC memory is the only flash memory listed on Samsung's website as available in a 16 Gb size. **Ex. 98** [Samsung Semiconductor, Flash Storage Products] at 4 in printout of <http://www.samsung.com/semiconductor/products/flash-storage/emmc/>; **Ex. 138** [Computing News] at 1.

155. On information and belief, SanDisk also has substantial engineering, research, and development facilities in the United States, including in San Jose, California. **Ex. 137** [Samsung Semiconductor, Location] at 2.

156. On information and belief, Samsung has also made significant investments in labor and capital with respect to articles protected by the Asserted Patents. Samsung Austin

Semiconductor has over 2600 employees in Austin, Texas. **Ex. 136** [Samsung Electronics, US Divisions]. When the NAND portion of the Austin facility was opening, Samsung Austin Semiconductor hired about 700 new employees and was expected to add \$40 million to Samsung's payroll by the time it was in full operation. **Ex. 138** [Computing News] at 2. On information and belief, these employees work on NAND production. In 2010, the Austin fabrication plants producing 12-inch NAND flash wafers had 1000 employees and had a payroll of \$70 million. **Ex. 139** [Samsung Austin Semiconductor Begins \$3.6B Expansion for Advanced Logic Chips] at 2. On information and belief, these employees work on NAND production. In addition to Samsung's manufacturing facilities in Austin, the headquarters of Samsung Semiconductor, Inc. is in San Jose, California. **Ex. 136** [Samsung Electronics, US Divisions]; **Ex. 137** [Samsung Semiconductor, Location]. On information and belief, Samsung also has support, marketing, and sales personnel in the United States based on its job listings and identified sales offices. *See* **Ex. 141** [Samsung Careers]; **Ex. 142** [Sales Network].

157. As was described in Section XI(A)(2), each limitation of certain claims of the Asserted Patents is met by Samsung eMMC or eMCP products developed, manufactured, sold, and used in the United States. **Exhibits 99-103** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed devices sold by MTL's licensee Samsung.

3. Toshiba's Domestic Industry Activities

158. On information and belief, MTL's licensee, Toshiba, has made a significant investment in plant and equipment, and/or in the employment of labor or capital, and/or has made a substantial investment in the exploitation of the Asserted Patents through engineering and research and development in the United States, as described by publicly available information attached hereto as **Exhibits 104 and 143-144**. MTL expects that discovery will further show that

one or more of the domestic industry requirements of subparagraphs 337(a)(3)(A), 337(a)(3)(B), and 337(a)(3)(C) are independently satisfied by Toshiba's domestic activities and investments.

159. On information and belief, MTL's licensee Toshiba has made significant investments in plant and equipment. In 2016 Toshiba reported property, and plant and equipment in North America of \$773 million. **Ex. 123** [2016 Annual Report] at 79.

160. On information and belief, Toshiba has made significant investments in labor and capital as well as through engineering and research and development with respect to articles protected by the Asserted Patents. Toshiba America Electronic Components, Inc. has over 600 employees and fifteen United States locations, with one additional location outside of the United States, that are responsible for engineering, marketing, and sales. **Ex. 143** [Toshiba America Electronic Components, Inc.] at 2. Toshiba America Electronic Components, Inc.'s headquarters are in Irvine, California. **Ex. 144** [Contact Us] at 1. Toshiba's has a sales office at its Irving location, as well as other locations throughout the United States. *See, e.g.,* **Ex. 144** [Contact Us] at 1, 2-7. Toshiba Americas also lists support contacts under Toshiba America Electronic Components, Inc., and provides United States phone numbers for support. **Ex. 144** [Contact Us] at 1, 8. The highlighted products on Toshiba America Electronic Components, Inc.'s Semiconductor & Storage Products United States webpage are NAND flash memory, including eMMC, and on information and belief Toshiba provides engineering, marketing, or support for these highlighted products on its United States website in the United States. **Ex. 143** [Toshiba America Electronic Components, Inc.] at 3-4. Toshiba America Electronic Components, Inc. United States locations, including its Irvine headquarters, are listed in Toshiba's Flash Memory catalog, and the Toshiba America Electronic Components, Inc. California location is listed as a sales office. **Ex. 104** [Toshiba Flash Memory Semiconductor Catalog Mar. 2016] at 17, 20. On

information and belief Toshiba provides engineering, marketing, or support for for these covered products, including eMMC, SD Cards, and microSD cards, at its the United States locations.

161. As was described in Section XI(A)(3), each limitation of certain claims of the Asserted Patents is met by Toshiba's eMMC or eMCP products and SD and MicroSD products sold and used in the United States. **Exhibits 110-114** and **Exhibits 105-109** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed devices sold by MTL's licensee Toshiba.

4. The Domestic Industry Activities of SK Hynix

162. On information and belief, MTL's licensee, SK Hynix, has made a significant investment in plant and equipment, and/or in the employment of labor or capital, and/or has made a substantial investment in the exploitation of the Asserted Patents through engineering and research and development in the United States, as described by publicly available information attached hereto as **Exhibits 145** through **147**. MTL expects that discovery will further show that one or more of the domestic industry requirements of subparagraphs 337(a)(3)(A), 337(a)(3)(B), and 337(a)(3)(C) are independently satisfied by SK Hynix's domestic activities and investments.

163. On information and belief, SK Hynix has made substantial investments in engineering, research, and development with respect to the products covered by the Asserted Patents. SK Hynix Memory Solutions Inc. is one of SK Hynix's R&D subsidiaries with its headquarters in San Jose, California. **Ex. 145** [Global Network]. On information and belief, SK Hynix Memory Solutions Inc. performs engineering, research, and development on eMMC products because one of its "notable company achievements" was to develop the "highest performance eMMC Controller for smartphones and tablets." **Ex. 146** [SK Hynix Memory Solutions, Company]. Additionally, in 2014, there were six openings at SK Hynix Memory Solutions Inc. for eMMC firmware engineers at SK Hynix Memory Solutions Inc. **Ex. 148**

[Firmware Engineer - eMMC - 6 openings]. SK Hynix also listed a job opening for a NAND Flash data-path Design Engineer in San Jose.

164. On information and belief, SK Hynix has made significant investments in labor and capital. SK Hynix America Inc. has its headquarters in San Jose, California, and has sales offices in Austin, Texas; Houston, Texas; Raleigh, North Carolina; and Seattle, Washington. **Ex. 145** [Global Network]. SK Hynix Memory Solutions Inc. has its headquarters in San Jose, California, as well. *Id.* In 2014, SK Hynix had 395 employees in the United States. **Ex. 147** [SK Hynix 2015 Sustainability Report] at 67.

165. As was described in Section XI(A)(4), each limitation of certain claims of the Asserted Patents is met by SK Hynix eMMC or eMCP products developed, manufactured, sold, and used in the United States. **Exhibits 116-120** are claim charts demonstrating that each limitation of certain claims of the Asserted Patents are met by licensed devices sold by MTL's licensee SK Hynix.

XII. RELIEF REQUESTED

166. WHEREFORE, by reason of the foregoing, MTL respectfully requests that the United States International Trade Commission:

(a) Institute an immediate investigation, pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337(a)(1)(B)(i) and (b)(1), with respect to violation of Section 337 by SanDisk Respondents based upon its sale for importation, importation, and/or sale after importation into the United States of the Accused Products that infringe one or more of the Asserted Claims of MTL's United States Patent Nos. RE45,542; RE45,486; 7,565,469; 9,063,850; and 8,307,180;

(b) Schedule and conduct a hearing on said unlawful acts pursuant to Section 337(c) for the purposes of (i) receiving evidence and hearing argument concerning whether there

has been a violation of Section 337, and (ii) following the hearing, determining that there has been a violation of Section 337;

(c) Issue a permanent limited exclusion order specifically directed to SanDisk Respondents, their subsidiaries, related companies, and agents, barring from entry into the United States any articles that infringe one or more of the Asserted Claims of MTL's United States Patent Nos. RE45,542; RE45,486; 7,565,469; 9,063,850; and 8,307,180.

(d) Issue a permanent cease and desist order, pursuant to 19 U.S.C. § 1337(f), directing SanDisk Respondents, their subsidiaries, related companies, and agents to cease and desist from selling for importation into the United States, importing, selling after importation into the United States, offering for sale, marketing, advertising, demonstrating, sampling, warehousing inventory for distribution, offering for sale, selling, distributing, licensing, testing, providing technical support, use, or other related commercial activity involving importing articles that infringe one or more of the Asserted Claims of MTL's United States Patent Nos. RE45,542; RE45,486; 7,565,469; 9,063,850; and 8,307,180.

(e) Impose a bond during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(e)(1) and (f)(1) to prevent further injury to MTL and its licensees' domestic industry relating to each of the Asserted Patents; and

(f) Grant such other and further relief as the Commission deems just and proper based on the facts determined by the investigation and the authority of the Commission.

Dated: December 5, 2016

Respectfully submitted


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