

Inc., (collectively “STMicro”), Toshiba Corporation, Toshiba America, Inc., and Toshiba America Electronic Components, Inc. (collectively “Toshiba”) as follows:

THE PARTIES

1. HSM Portfolio LLC is a Delaware limited liability company with its principal place of business located at 20883 Stevens Creek Blvd., Suite 100, Cupertino, California 95014.

2. Technology Properties Limited LLC (“TPL”) is a California limited liability company with its principal place of business located at 20883 Stevens Creek Blvd., Suite 100, Cupertino, California 95014.³

3. Upon information and belief, Elpida Memory, Inc. is a Japanese corporation that claims as its principal place of business, Sumitomo Seimei Yaesu Bldg. 3F, 2-1 Yaesu 2-chome, Chuo-ku, Tokyo 104-0028 Japan. Upon information and belief, Elpida Memory, Inc. may be served with process in Japan pursuant to the Hague Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters. Upon information and belief, Elpida Memory, Inc. has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware by directing and/or controlling the actions of its subsidiary, Elpida Memory (USA) Inc.

allegations against other Defendants) to specify additional factual details regarding to Elpida’s knowledge of the patents-in-suit and willful infringement, including but not limited to the facts that on April 11, 2008, Mr. Silverman contacted Yukio Sakamoto, President & CEO at Elpida, and on April 18, 2008, sent Mr. Sakamoto a follow-up letter and enclosed an exemplary claim chart. Nevertheless, Plaintiffs have not done so due to the Court’s stay order. Plaintiffs expressly reserve their right to amend their claims against Elpida if and when the stay is been lifted.

³ On March 20, 2013, TPL filed a petition under Chapter 11 of the U.S. Bankruptcy Code in the U.S. Bankruptcy Court for the Northern District of California, Case No. 13-51589-SLJ. Pursuant to Section 362 of the U.S. Bankruptcy Code, all actions and proceedings against TPL are automatically stayed, but the stay does not affect TPL’s actions and proceedings against the parties in this case. *See Maritime Elec. Co. v. United Jersey Bank*, 959 F.2d 1194, 1204-05 (3d Cir. 1991); *see also White v. City of Santee*, 186 B.R. 700, 705-07 (9th Cir. BAP 1995).

4. Upon information and belief, Elpida Memory (USA) Inc. is incorporated under the laws of the State of Delaware, has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware. Upon information and belief, Elpida Memory (USA) Inc. claims as its principal place of business, 1175 Sonora Ct., Sunnyvale, California 94086. Upon information and belief, Elpida Memory (USA) Inc. may be served with process by serving its registered agent, National Registered Agents, Inc., 160 Greentree Drive, Suite 101, Dover, Delaware 19904. Upon information and belief, Elpida Memory (USA) Inc. is a subsidiary of Elpida Memory, Inc.

5. Upon information and belief, Micron Technology, Inc. is incorporated under the laws of the State of Delaware, has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware. Upon information and belief, Micron Technology, Inc. claims as its principal place of business, 8000 South Federal Way, Boise, Idaho 83707. Micron Technology, Inc. has already appeared through counsel of record and answered the Second Amended Complaint.

6. Upon information and belief, SanDisk Corporation is incorporated under the laws of the State of Delaware, has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware. Upon information and belief, SanDisk Corporation claims as its principal place of business, 951 SanDisk Drive, Milpitas, California 95035. SanDisk Corporation has already appeared through counsel of record and answered the Second Amended Complaint.

7. Upon information and belief, STMicroelectronics N.V. is a Swiss corporation that claims as its principal place of business, 39, Chemin du Champ des Filles, Plan-Les-Outes, CH 1228, Geneva, Switzerland. STMicroelectronics N.V. has already appeared through counsel of record and answered the Second Amended Complaint. Upon information and belief, STMicroelectronics N.V. has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware by directing and/or controlling the actions of its subsidiary, STMicroelectronics, Inc.

8. Upon information and belief, STMicroelectronics, Inc. is incorporated under the laws of the State of Delaware, has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware. Upon information and belief, STMicroelectronics, Inc. claims as its principal place of business, 1310 Electronics Drive, Carrollton, Texas 75006. STMicroelectronics, Inc. has already appeared through counsel of record and answered the Second Amended Complaint. Upon information STMicroelectronics, Inc. is a subsidiary of STMicroelectronics N.V.

9. Upon information and belief, Toshiba Corporation is a Japanese corporation that claims as its principal place of business, 1-1, Shibuhara 1-chome, Minato-ku, Tokyo 105-8001, Japan. Toshiba Corporation has already appeared through counsel of record and answered the Third Amended Complaint. Upon information and belief, Toshiba Corporation has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the

laws of the State of Delaware by directing and/or controlling the actions of its subsidiary, Toshiba America, Inc.

10. Upon information and belief, Toshiba America, Inc. is incorporated under the laws of the State of Delaware, has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware. Upon information and belief, Toshiba America, Inc. claims as its principal place of business, 1251 Avenue of the Americas, Suite 4110, New York, New York 10020. Toshiba America, Inc. has already appeared through counsel of record and answered the Third Amended Complaint. Upon information and belief, Toshiba America, Inc. is a subsidiary of Toshiba Corporation.

11. Upon information and belief, Toshiba America Electronic Components, Inc. is a California corporation that claims as its principal place of business, 19900 MacArthur Blvd., Suite 400, Irvine, California 92612. Toshiba America Electronic Components, Inc. has already appeared through counsel of record and answered the Third Amended Complaint. Upon information and belief, Toshiba America Electronic Components, Inc. is a subsidiary of Toshiba America, Inc. Upon information and belief, Toshiba America Electronic Components, Inc. has conducted and regularly conducts business within this District, has purposefully availed itself of the privileges of conducting business in this District, and has sought protection and benefit from the laws of the State of Delaware by being directed and/or controlled by its parent, Toshiba America, Inc.

JURISDICTION AND VENUE

12. This action arises under the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*, including 35 U.S.C. §§ 271, 281, 283, 284, and 285. This Court has subject matter jurisdiction over this case for patent infringement under 28 U.S.C. §§ 1331 and 1338(a).

13. As further detailed herein, this Court has personal jurisdiction over each Defendant. Each Defendant has conducted and regularly conducts business within the United States and this District. Each Defendant has purposefully availed itself of the privileges of conducting business in the United States, and more specifically in this District. Each Defendant has sought protection and benefit from the laws of the State of Delaware by incorporating in the State of Delaware, incorporating a subsidiary in the State of Delaware, and/or by placing infringing products into the stream of commerce through an established distribution channel with the expectation and/or knowledge that they will be purchased by consumers in this District. Plaintiffs' causes of action arise directly from Defendants' business contacts and other activities in this District.

14. Each Defendant, directly or through intermediaries (including distributors, retailers, and others), subsidiaries, alter egos, and/or agents, ships, distributes, offers for sale, and/or sells its products in the United States and this District. Each Defendant has purposefully and voluntarily placed one or more of its infringing products, as described below, into the stream of commerce with the expectation and/or knowledge that they will be purchased by consumers in this District. Each Defendant knowingly and purposefully ships infringing products into this District through an established distribution channel. These infringing products have been and continue to be purchased by consumers in this District. Upon information and belief, each Defendant has committed the tort of patent infringement in this District, has contributed to patent infringement in this District, and/or has induced others to commit patent infringement in this District.

15. Venue is proper in this Court under 28 U.S.C. §§ 1391(b), (c), and (d), as well as 28 U.S.C. § 1400(b), in that, upon information and belief, each Defendant has committed acts

within this judicial District giving rise to this action and does business in this District, including but not limited to making sales in this District, providing service and support to their respective customers in this District, and/or operating an interactive website that is available to persons in this District, which website advertises, markets, and/or offers for sale infringing products.

BACKGROUND

A. The Patents-In-Suit.

16. U.S. Patent No. 5,030,853, titled “High Speed Logic and Memory Family Using Ring Segment Buffer,” (“the ’853 patent”) was duly and legally issued by the U.S. Patent and Trademark Office on July 9, 1991, after full and fair examination. Albert W. Vinal is the sole inventor listed on the ’853 patent, which he assigned to Thunderbird Technologies, Inc. (“Thunderbird”) A reexamination certificate for the ’853 patent issued on February 16, 1993, and a second reexamination certificate for the ’853 patent issued on July 20, 2010. A true and correct copy of the ’853 patent as re-examined is attached as **Exhibit A** and made a part hereof.

17. U.S. Patent No. 5,391,949, titled “Differential Latching Inverter Circuit,” (“the ’949 patent”) was duly and legally issued by the U.S. Patent and Trademark Office on February 21, 1995, after full and fair examination. Albert W. Vinal is the sole inventor listed on the ’949 patent, which he assigned to Thunderbird. A true and correct copy of the ’949 patent is attached as **Exhibit B** and made a part hereof.

18. U.S. Patent No. 5,247,212, titled “Complementary Logic Input Parallel (CLIP) Logic Circuit Family,” (“the ’212 patent”) was duly and legally issued by the U.S. Patent and Trademark Office on September 21, 1993, after full and fair examination. Albert W. Vinal is the sole inventor listed on the ’212 patent, which he assigned to Thunderbird. A true and correct copy of the ’212 patent is attached as **Exhibit C** and made a part hereof.

19. U.S. Patent No. 5,001,367, titled “High Speed Complementary Field Effect Transistor Logic Circuits,” (“the ’367 patent”) was duly and legally issued by the U.S. Patent and Trademark Office on March 19, 1991, after full and fair examination. Albert W. Vinal is the sole inventor listed on the ’367 patent, which he assigned to Thunderbird. A true and correct copy of the ’367 patent is attached as **Exhibit D** and made a part hereof.

20. Albert W. Vinal, the sole inventor of the ’853 patent, the ’949 patent, the ’212 patent, and the ’367 patent (collectively the “patents-in-suit”), is a named inventor on over eighty (80) U.S. patents.

21. In 1989, Mr. Vinal founded Thunderbird. In total, Mr. Vinal authored twenty-nine (29) patents on fundamental design techniques for high-speed memories and high-performance transistor design, including the patents-in-suit. Mr. Vinal’s high-speed memory designs include fundamental improvements to circuit and associated transistor design, and his inventions have become common in high-speed logic circuits.

22. Mr. Vinal’s fundamental designs are widely used in high-speed circuits, and improve the speed, power consumption, and noise immunity of digital CMOS based integrated circuits. These designs include improvements to circuit and associated transistor designs that have become fundamental building blocks for a huge variety of products because the designs are easily transferable to multiple integrated circuit families and applications through design reuse strategies, which enable design teams to significantly shorten design cycles and reduce research and development costs. Mr. Vinal’s design techniques have enabled the industry to achieve significant performance advantages across several kinds of integrated circuits including: microprocessors, microcontrollers, programmable logic, digital signal processors (“DSPs”), application-specific integrated circuits (“ASICs”), system on chips (“SoCs”), SDRAM (DDR,

DDR2, and DDR3), NOR flash, SRAM, microelectromechanical systems (“MEMS”) devices, and more.

23. On June 19, 2007, Thunderbird assigned HSM Portfolio LLC all of the right, title, and interest in the patents-in-suit, including the exclusive, worldwide right to sue and collect for its own use and benefit all claims for damages by reason of past infringement or use of the patents-in-suit, subject to then-existing licenses.

24. On June 19, 2007, HSM Portfolio LLC granted Technology Properties Limited (“TPL”) an exclusive, worldwide, and perpetual license with respect to those rights which enable and/or facilitate the management, development, and commercialization of the patents-in-suit. Thereafter, TPL’s licensing division, Alliacense Limited (“Alliacense”), began a licensing program for the patents-in-suit as part of its “Fast Logic Portfolio.”

B. Defendants’ Infringing Conduct.

25. Upon information and belief, Defendants collectively make, use, offer to sell, and/or sell within, and/or import into the United States semiconductor devices that utilize the fundamental technologies covered by the patents-in-suit. Upon information and belief, the infringing semiconductor devices include, but are not limited to, processors such as A/D converters, codecs, digital video cable equalizers, field programmable gate (“FPG”) arrays, graphics processors, image sensors, integrated circuits (“IC”), microcontroller units (“MCU”), radio frequency (“RF”) transceivers, system-in-packages, and voltage regulators. Upon information and belief, the semiconductor devices also include, but are not limited to, memory devices such as column drivers, synchronous dynamic random access memory (“SDRAM”), and flash memory.

26. Defendants’ infringing semiconductor devices incorporate the fundamental inventions covered by the patents-in-suit to perform their functions faster, more efficiently,

and/or with less noise. Upon information and belief, each and every use of these semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon information and belief, when users power on these semiconductor devices and/or products containing these semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of these semiconductor devices cannot disable the infringing features of these semiconductor devices. The accused semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of these semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

27. Certain Defendants, including, but not limited to, SanDisk and Toshiba, further infringe the patents-in-suit by incorporating these semiconductor devices into system-level products that are made, used, offered for sale, and/or sold within, and/or imported into the United States, including this District. Upon information and belief, third-party manufacturers also incorporate Defendants' infringing semiconductor devices into system-level products, including, for example, automobiles, computers, tablets, mobile phones, cameras, media players, hard drives, USB drives, embedded storage devices, and/or memory cards, that are made, used, offered for sale, and/or sold within, and/or imported into the United States, including this District. Upon information and belief, third-party distributors purchase Defendants' infringing semiconductor devices for sale or importation into the United States, including this District. Upon information and belief, third-party consumers use Defendants' semiconductor devices and products containing Defendants' semiconductor devices in the United States, including this District.

C. Defendants' Actual Notice of Infringing Conduct.

1. Plaintiffs' Notice to Micron.

28. On April 11, 2008, Mr. Silverman contacted Steven R. Appleton, Chairman, President, and Chief Executive Officer at Micron, via letter to provide a background of the Fast Logic Portfolio and present Micron with an opportunity to take an early license. Mr. Silverman noted that his reverse engineering showed that most of Micron's semiconductor products required a license to the Fast Logic Portfolio. Mr. Silverman enclosed a data disk containing the full text of all of the patents in the Fast Logic Portfolio, including the '853, '949, '212, and '367 patents.

29. On April 18, 2008, Mr. Silverman provided Mr. Appleton with exemplary claim charts for Micron's MT9T012 and DDR SDRAM MT46V32M8TG, each reading one or more claims of the '949 or '853 patents on the identified products. Mr. Silverman advised that the analysis was exemplary only and further placed Micron on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

30. On June 4, August 18, September 3, October 1, November 4, December 9, 2008, and January 12, 2009, Plaintiffs' representatives had follow-up communications with Micron in an attempt to license the Fast Logic Portfolio.

31. On February 17, 2009, Mr. Silverman forwarded Roderic W. Lewis, Vice President of Legal Affairs and General Counsel at Micron, exemplary claim charts for Micron's 256M DDR SDRAM MT46V16M16TG-75B and 1G DDR3 SDRAM MT41J128M8HX, each reading one or more claims of the '853 patent on the identified products.

32. On February 24, 2009, Plaintiffs' representatives had follow-up communications with Micron in an attempt to license the Fast Logic Portfolio.

33. Despite nearly one year of communications and specific notice of its infringement of the patents-in-suit, Micron's representatives never met to discuss the terms of an appropriate license to the Fast Logic Portfolio. And, despite having full knowledge of the patents-in-suit and its infringement, Micron intentionally continued to make, use, offer for sale, sell in the United States, and/or import into the United States, semiconductor devices that infringe one or more claims of the patents-in-suit. Micron did so with an objectively high likelihood that its actions constituted infringement of the patents-in-suit, and the objectively-defined risk was either known or so obvious that it should have been known.

2. Plaintiffs' Notice to SanDisk.

34. On April 11, 2008, Mr. Silverman contacted E. Earle Thompson, Chief Intellectual Property Counsel and Senior Director at SanDisk, via letter to provide a background of the Fast Logic Portfolio and present SanDisk with an opportunity to take an early license.

35. On April 18, 2008, Mr. Silverman forwarded Mr. Thompson exemplary claim chart for SanDisk's Controller SDCE, reading one or more claims of the '949 patent on the identified product. Mr. Silverman noted that the analysis was exemplary only and further placed SanDisk on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

36. On May 12 and July 25, 2008, Plaintiffs' representatives had follow-up communications with SanDisk in an attempt to license the Fast Logic Portfolio.

37. On August 20, 2008, Ms. Wongso forwarded Mr. Thompson exemplary claim charts for SanDisk's Controller SDCE and Memory Card 128MB Secure Digital SD Card, each reading one or more claims of the '949 patent on the identified products. Ms. Wongso noted that the identified products were exemplary only and further placed SanDisk on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

38. On August 20, 2008, Plaintiffs' representatives had an introductory teleconference with SanDisk.

39. On August 22, 2008, Mr. Thompson confirmed that SanDisk had received Ms. Wongso's August 20 letter and the attached claim charts.

40. On September 8, 2008, Plaintiffs' representatives presented briefing materials on the Fast Logic Portfolio during a follow-up meeting with SanDisk.

41. On September 17, 2008, Ms. Wongso forwarded Mr. Thompson exemplary claim charts for SanDisk's 16G NAND Flash TC58NVG4D1DTG00 and 8G NAND Flash TC58NVG3D3CTG00, each reading one or more claims of the '853 patent on the identified products. Ms. Wongso noted that the identified products were exemplary only and further placed SanDisk on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

42. On November 17, November 24, and December 1, 2008, and January 7 and January 12, 2009, Plaintiffs' representatives had follow-up communications with SanDisk in an attempt to license the Fast Logic Portfolio.

43. On January 27, 2009, Mr. Silverman and Mr. Thompson had a follow-up teleconference.

44. On January 28, March 20, and March 31, 2009, Plaintiffs' representatives had follow-up communications with SanDisk in an attempt to license the Fast Logic Portfolio.

45. After this date, Plaintiffs received no further communications from SanDisk prior to filing the Original Complaint. And, despite having full knowledge of the patents-in-suit and its infringement, SanDisk intentionally continued to make, use, offer for sale, sell in the United States, and/or import into the United States, semiconductor devices that infringe one or more

claims of the patents-in-suit. SanDisk did so with an objectively high likelihood that its actions constituted infringement of the patents-in-suit, and the objectively-defined risk was either known or so obvious that it should have been known.

3. Plaintiffs' Notice to STMicro.

46. On May 16, 2008, Mr. Silverman contacted Carlo Bozotti, President, Chief Executive Officer, and Chairman of the Executive Committee at STMicro, to provide a background of the Fast Logic Portfolio and present STMicro with an opportunity to take an early license. Mr. Silverman noted that reverse engineering showed that most of STMicro's semiconductor products required a license to the Fast Logic Portfolio, including SoCs, microprocessors, microcontrollers, and most memory types. Mr. Silverman directed STMicro to review the Fast Logic Portfolio and particularly identified the '949, '212, '853, and '367 patents as exemplary.

47. On June 13, 2008, Pierre Ollivier, Corporate Vice President and General Counsel at STMicro, acknowledged receipt of Mr. Silverman's May 16 letter.

48. On July 24, and August 4, 2008, Plaintiffs' representatives had follow-up communications with STMicro in an attempt to license the Fast Logic Portfolio.

49. On August 15, 2008, Mr. Silverman provided an exemplary product list that required a license to the Fast Logic Portfolio, including, but not limited to, STM8S, ST6, ST7, μ PSD, ST10, STM32, STR7, STR9, ST19, ST21, ST23, ST32, M48T02, M48T08, M48T08Y, M48T12, M48T128Y, M48T129V, M48T129Y, M48T18, M48T35, M48T35AV, M48T35Y, M48T37V, M48T37Y, M48T512Y, M48T58, M48T58Y, M48T86, M440T1MV, M48T201V, M48T201Y, M48T212V, M48Z02, M48Z08, M48Z12, M48Z128, M48Z128Y, M48Z129V, M48Z18, M48Z2M1V, M48Z2M1Y, M48Z32V, M48Z35, M48Z35AV, M48Z35Y,

M48Z512A, M48Z512AY, M48Z58, M48Z58Y, STA013, STA016A, STA015, STA016T, STA310, STA027, STA330, TDA7590, and STA331.

50. On September 26, 2008, Plaintiffs' representatives had follow-up communications with STMicro in an attempt to license the Fast Logic Portfolio.

51. On December 2, 2008, Ms. Wongso forwarded Mr. Ollivier exemplary claim charts for STMicro's CMOS Image Sensor S550B1A and 32M Dual Block Flash M59DR032A, each reading one or more claims of the '853 patent on the identified products. Ms. Wongso noted that the identified products were exemplary only and further placed STMicro on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

52. On December 3, 2008, and February 2, 2009, Plaintiffs' representatives had follow-up communications with STMicro in an attempt to license the Fast Logic Portfolio.

53. Despite over nearly one year of communications and specific notice of its infringement of the patents-in-suit, STMicro's representatives never met to discuss the terms of an appropriate license to the Fast Logic Portfolio. And, despite having full knowledge of the patents-in-suit and its infringement, STMicro intentionally continued to make, use, offer for sale, sell in the United States, and/or import into the United States, semiconductor devices that infringe one or more claims of the patents-in-suit. STMicro did so with an objectively high likelihood that its actions constituted infringement of the patents-in-suit, and the objectively-defined risk was either known or so obvious that it should have been known.

4. Plaintiffs' Notice to Toshiba.

54. On June 16, 2008, Mr. Silverman contacted Hiroshi Miyauchi, Toshiba's General Manager, Intellectual Property Division, via letter to provide a background of the Fast Logic Portfolio and present Toshiba with an opportunity to take an early license. Mr. Silverman

enclosed exemplary claim charts for Toshiba's Color Television 40WH08G, 40WH08B, Laptop Tecra A6-EZ6411, and e-STUDIO 163/203, each reading one or more claims of the '212 patent on the identified products. Mr. Silverman noted that the analysis was exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

55. On July 7, 2008, Katsuhiko Mashimo confirmed that Toshiba had received Mr. Silverman's June 16 letter and enclosed claim charts.

56. On July 24, July 30, July 31, September 5, and September 8, 2008, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

57. On September 17, 2008, Masako King, a Licensing Coordinator at Alliacense, forwarded Mr. Mashimo exemplary claim charts for Toshiba's 16G NAND Flash TC58NVG4D1DTG00 and 8G NAND Flash TC58NVG3D3CTG00, each reading one or more claims of the '853 patent on the identified products. Ms. King noted that the identified products were exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

58. On September 24, 2008, Plaintiffs' representatives had an introductory meeting with Toshiba.

59. On September 29, September 30, October 3, October 14, October 23, October 27, and November 17, 2008, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

60. On December 2, 2008, Plaintiffs' representatives had a follow-up meeting with Toshiba to discuss a license to the Fast Memory Portfolio.

61. On December 19, 2008, Eiko Murakami, a Licensing Coordinator at Alliacense, forwarded Mr. Mashimo exemplary claim charts for 24 Toshiba products, including, but not limited to, the Toshiba Color Television 40WH08G, 40WH08B, Color TV MW20FM3, Color TV MW24FM1, Color TV MW24FM1C, Color TV MW24FM3, Color TV MW24FM5, DVD Video Player SD-400V/SD-K600, DVD Video Audio Player SD-4700/SD-5700, DVD Video Player SD-5109, DVD Video Player and Cassette Recorder SD-V280, Mobile Phone 904T, Mobile Phone A5501T, Laptop Tecra A6-EZ6411, Notebook Satellite A200 Series, Notebook Satellite A210, Notebook Satellite A300 Series, Notebook Satellite P300 Series, Projection Television 46HM94/52HM94/62HM94, Projection TV 52HMX94/62HMX94, and Toshiba e-STUDIO 163/203, each reading one or more claims of the '212, '949, or '367 patents on the identified products. Ms. Murakami noted that the identified products were exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

62. On January 5, January 9, January 14, January 22, January 23, January 26, January 27, February 19, and March 19, 2009, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

63. On April 1, 2009, Ms. Nakagami-Sher forwarded Mr. Mashimo an exemplary claim chart for Toshiba's 16G NAND Flash TC58NVGD1DTG00, reading one or more claims of the '853 patent on the identified product. Ms. Nakagami-Sher noted that the identified product was exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

64. On May 1, May 4, May 27, May 28, June 19, June 25, July 2, July 5, and July 6, 2009, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

65. On August 3, 2009, Ms. Nakagami-Sher forwarded Mr. Mashimo exemplary claim charts for 32 Toshiba products, including, but not limited to, the Color TV 40WH08G, 40WH08B, Color TV MW20FM1, Color TV MW20FM3, Color TV MW24FM1, Color TV MW24FM1C, Color TV MW24FM3, Color TV MW24FM5, DVD Video Player SD-400V/SD-K600, DVD Video Audio Player SD-4700/SD-5700, DVD Video Player SD-5109, DVD Video Player and Cassette Recorder SD-V280, Hard Drive MK3008GAL, Hard Drive MK4025GAS, HD LCD TV 32HL95, Mobile Phone 904T, Mobile Phone A5501T, Printer E-Studio 3511, Notebook Satellite A200, Notebook Satellite A210, Notebook Satellite A300, Notebook Satellite P300, Notebook Tecra A6-EZ6411, Projection Television 46HM94/52HM94/62HM94, Projection TV 52HMX94/62HMX94, Digital Photocopier e-STUDIO 163/203, 16G NAND Flash TC58NVG4D1DTG00, and 8G NAND Flash TC58NVG3D3CTG00, each reading one or more claims of the '853, '212, '949, or '367 patents on the identified products. Ms. Nakagami-Sher noted that the identified products were exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

66. On August 7, August 11, August 12, August 17, August 18, August 27, August 30, September 1, September 3, September 11, September 28, September 29, October 6, October 22, November 3, November 8, November 9, November 16, November 23, November 25, November 29, and December 4, 2009, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

67. On December 7, 2009, Ms. Nakagami-Sher forwarded Mr. Mashimo exemplary claim charts for 39 Toshiba products, including, but not limited to, Color TV 40WH08G, 40WH08B, Color TV MW20FM1, Color TV MW20FM3, Color TV MW24FM1, Color TV MW24FM1C, Color TV MW24FM3, Color TV MW24FM5, DVD Video Player SD-400V/SD-K600, DVD Video Audio Player SD-4700/SD-5700, DVD Video Player SD-5109, DVD Video Player and Cassette Recorder SD-V280, Hard Drive MK3008GAL, Hard Drive MK4025GAS, HD LCD TV 32HL95, Mobile Phone 904T, Mobile Phone A5501T, Mobile Phone Protégé 910, Printer E-Studio 3511, Notebook Satellite A200, Notebook Satellite A210, Notebook Satellite A300, Notebook Satellite L300D-245, Notebook Satellite P300, Notebook Tecra A6-EZ6411, Projection Television 46HM94/52HM94/62HM94, Projection TV 52HMX94/62HMX94, Digital Photocopier e-STUDIO 163/203, 16G NAND Flash TC58NVG4D1DTG00, 8G NAND Flash TC58NVG3D3CTG00, and 32-bit RISC MCU TMP19A43FDXBG, each reading one or more claims of the '853, '212, '949, or '367 patents on the identified products. Ms. Nakagami-Sher noted that the identified products were exemplary only and further placed Toshiba on notice that its other semiconductor based-products infringed the Fast Logic Portfolio and therefore required a license.

68. On January 8, January 12, February 3, February 26, March 26, March 29, April 8, April 22, April 26, May 6, May 24, June 25, July 23, August 5, August 10, September 9, September 12, October 18, October 22, November 19, and December 17, 2010, and January 6, January 10, January 25, February 6, February 7, February 9, and February 10, 2011, Plaintiffs' representatives had follow-up communications with Toshiba in an attempt to license the Fast Logic Portfolio.

69. After this date, Plaintiffs received no further communications from Toshiba prior to filing the Original Complaint. And, despite having full knowledge of the patents-in-suit and its infringement, Toshiba intentionally continued to make, use, offer for sale, sell in the United States, and/or import into the United States, semiconductor devices that infringe one or more claims of the patents-in-suit. Toshiba did so with an objectively high likelihood that its actions constituted infringement of the patents-in-suit, and the objectively-defined risk was either known or so obvious that it should have been known.

COUNT I

Patent Infringement of U.S. Patent No. 5,030,853

70. Plaintiffs repeat and re-allege each and every allegation of paragraphs 1-69 as though fully set forth herein.

71. The '853 patent is valid and enforceable.

72. Elpida, Micron, SanDisk, STMicro, and Toshiba have at no time, either expressly or impliedly, been licensed under the '853 patent.

73. Upon information and belief, to the extent any marking or notice was required by 35 U.S.C. § 287, Plaintiffs have complied with the requirements of that statute by providing actual or constructive notice to Elpida, Micron, SanDisk, STMicro, and Toshiba of their alleged infringement. Upon information and belief, prior to July 4, 2008, no commercial products embodying the '853 patent were ever made, offered for sale, or sold within the United States with permission from, or under the authority of, Thunderbird and/or Plaintiffs. Upon information and belief, Plaintiffs surmise that any express licensees of the '853 patent have complied with the marking requirements of 35 U.S.C. § 287 by placing a notice of the '853 patent on all goods made, offered for sale, and/or sold within, and/or imported into, the United States that embody one or more claims of that patent.

A. Elpida's Infringement of the '853 Patent.

74. Upon information and belief, Elpida has been directly and literally infringing under 35 U.S.C. § 271(a) and/or indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to customers and/or distributors (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the E5108AB-5C-E DDR2 SDRAM and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Elpida that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent. Upon information and belief, the EDJ1104BASE, EDJ1108BABG, EDJ1108BASE, EDJ1108BBSE, EDJ1116BABG, EDEJ1116BASE, EBJ21UE8BASA, EBJ21UE8BAU0, EBJ11UE6BASA, EBJ11UE6BAU0, EBJ82HF4B1RA, EBJ41HE4BAFA, EBJ41RE4BAFA, EBJ42RE8BAFA, EBJ20RE4BAFA, EBJ21RE8BAFA, EBJ10RE8BAFA, EBJ21UE8BAFA, EBJ21UE8BAW0, EBJ21EE8BAFA, EBJ10UE8BAFA, EBJ10UE8BAW0, EBJ10EE8BAFA, EBJ10EE8BAW0, EBJ10EE8BAWA, EDE2104ABSE, EDE2108ABSE, EDE2116ABSE, EDE1104ABSE, EDE1104ACSE, EDE1108ABSE, EDE1108ACBG, EDE1108ACSE, EDE1116ABSE, EDE1116ACBG, EDE116ACSE, EDE1116ACSE-6E-E, EDE5108AGBG, EDE5108AGBG-6E-E, EDE5108AJBG, EDE5108AJSE, EDE5116AHSE, EDE5116AJBG, EDE5116AJSE, EDE2508AEBG, EDE2516AEBG, EBE81AF4ABHA, EBE82AF4A1RA, EBE41AE4ABHA, EBE41AE4ACFA, EBE41RE4ABHA, EBE41RE4ACFA, EBE20AE4ABFA, EBE20AE4ACFA, EBE20RE4ABFA, EBE20RE4ACFA, EBE21AD4AJFA, EBE21RD4AJFA, EBE10AD4AJFA, EBE10AE8ACFA, EBE10RD4AJFA, EBE10RE8ACFA, EBE51AD8AJFA,

EBE51RD8AJFA, EBE41UF8ABFA, EBE41EF8ABFA, EBE21UE8ABFA, EBE21UE8ACFA,
 EBE21UE8ACWA, EBE21EE8ABFA, EBE21EE8ACFA, EBE21EE8ACWA,
 EBE10UE8ACFA, EBE10UE8ACWA, EBE11UD8AHFA, EBE11UD8AHWA,
 EBE11UD8AJWA, EBE10EE8ACFA, EBE10EE8ACWA, EBE11ED8AJWA,
 EBE51UD8AJWA, EBE51ED8AJWA, EBE41UF8ABDA, EBE21UE8ABDA,
 EBE21UE8ACSA, EBE21UE8ACUA, EBE11UD8AJUA, EBE11UE6ACSA,
 EBE11UE6ACUA, EBE52UD6AJUA, EBE81FF4ABHT, EBE82FF4A1RQ, EBE41FE4ABHD,
 EBE41FE4ACFT, EBE21FD4AJFT, EBE21FE8ACFT, EBE10FE8ACFT, EBE11FD8AJFT,
 EBE51FD8AJFT may also infringe the '853 patent.

75. Upon information and belief, Elpida has been directly and equivalently infringing under the doctrine of equivalents and/or indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to customers and/or distributors (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the E5108AB-5C-E DDR2 SDRAM and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Elpida that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent. Upon information and belief, the EDJ1104BASE, EDJ1108BABG, EDJ1108BASE, EDJ1108BBSE, EDJ1116BABG, EDEJ1116BASE, EBJ21UE8BASA, EBJ21UE8BAU0, EBJ11UE6BASA, EBJ11UE6BAU0, EBJ82HF4B1RA, EBJ41HE4BAFA, EBJ41RE4BAFA, EBJ42RE8BAFA, EBJ20RE4BAFA, EBJ21RE8BAFA, EBJ10RE8BAFA,

EBJ21UE8BAFA, EBJ21UE8BAW0, EBJ21EE8BAFA, EBJ10UE8BAFA, EBJ10UE8BAW0, EBJ10EE8BAFA, EBJ10EE8BAW0, EBJ10EE8BAWA, EDE2104ABSE, EDE2108ABSE, EDE2116ABSE, EDE1104ABSE, EDE1104ACSE, EDE1108ABSE, EDE1108ACBG, EDE1108ACSE, EDE1116ABSE, EDE1116ACBG, EDE116ACSE, EDE1116ACSE-6E-E, EDE5108AGBG, EDE5108AGBG-6E-E, EDE5108AJBG, EDE5108AJSE, EDE5116AHSE, EDE5116AJBG, EDE5116AJSE, EDE2508AEBG, EDE2516AEBG, EBE81AF4ABHA, EBE82AF4A1RA, EBE41AE4ABHA, EBE41AE4ACFA, EBE41RE4ABHA, EBE41RE4ACFA, EBE20AE4ABFA, EBE20AE4ACFA, EBE20RE4ABFA, EBE20RE4ACFA, EBE21AD4AJFA, EBE21RD4AJFA, EBE10AD4AJFA, EBE10AE8ACFA, EBE10RD4AJFA, EBE10RE8ACFA, EBE51AD8AJFA, EBE51RD8AJFA, EBE41UF8ABFA, EBE41EF8ABFA, EBE21UE8ABFA, EBE21UE8ACFA, EBE21UE8ACWA, EBE21EE8ABFA, EBE21EE8ACFA, EBE21EE8ACWA, EBE10UE8ACFA, EBE10UE8ACWA, EBE11UD8AHFA, EBE11UD8AHWA, EBE11UD8AJWA, EBE10EE8ACFA, EBE10EE8ACWA, EBE11ED8AJWA, EBE51UD8AJWA, EBE51ED8AJWA, EBE41UF8ABDA, EBE21UE8ABDA, EBE21UE8ACSA, EBE21UE8ACUA, EBE11UD8AJUA, EBE11UE6ACSA, EBE11UE6ACUA, EBE52UD6AJUA, EBE81FF4ABHT, EBE82FF4A1RQ, EBE41FE4ABHD, EBE41FE4ACFT, EBE21FD4AJFT, EBE21FE8ACFT, EBE10FE8ACFT, EBE11FD8AJFT, EBE51FD8AJFT

may also infringe the '853 patent. These semiconductor devices and/or products containing these semiconductor devices perform substantially the same function as the inventions embodied in one or more claims of the '853 patent in substantially the same way to achieve the same result.

76. Upon information and belief, these semiconductor devices and/or products containing these semiconductor devices have no substantial non-infringing uses, and Elpida had

knowledge of the non-staple nature of these semiconductor devices and/or products containing these semiconductor devices and the '853 patent throughout the entire period of its infringing conduct or at least by June 27, 2008, when Elpida was formally placed on notice of its infringement.

B. Micron's Infringement of the '853 Patent.

77. Upon information and belief, Micron has been directly under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the MT46V16M16TG-75B DDR SDRAM, MT46V32M8TG DDR SDRAM, MT41J128M8HX DDR3 SDRAM, and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Micron that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent. Upon information and belief, the MT41J128M8JP, MT46V16M16TG-75, MT46V16M16TG-75EC, MT46V32M8P-6TG, MT46V16M16TG-6TF, MT46V16M16P-5BF, MT46V32M16P-6T, MT46V8M16P-75D, MT46V8M16P-6T, MT46V32M16TC-75C, MT46V16M16P, MT46V8M16P-5BD, MT46V32M8TG-5BG, MT46V32M8-5B, MT46V8M16TG-6T, MT46V64M8FN-6, MT46V16M16P-6TITF, MT46V16M16-5B, MT46V8M16P-6TD, and MT46V16M16P-75LF may also infringe the '853 patent.

78. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase Micron's semiconductor devices and/or products containing

semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the MT46V16M16TG-75B DDR SDRAM, MT46V32M8TG DDR SDRAM, and MT41J128M8HX DDR3 SDRAM, also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '853 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, those semiconductor devices and/or products containing semiconductor devices.

79. Upon information and belief, Micron had knowledge of the '853 patent and its infringing conduct at least since April 18, 2008, when Micron was formally placed on notice of its infringement. Specifically, by letter to Micron's representative, Mr. Appleton, dated April 18, 2008, Plaintiffs' representative, Mr. Silverman, disclosed an exemplary claim chart for Micron's DDR SDRAM MT46V32M8TG, reading one or more claims of the '853 patent on the identified product.

80. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Micron on notice of its infringement, Micron has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase Micron's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the MT46V16M16TG-75B DDR SDRAM, MT46V32M8TG DDR SDRAM, and MT41J128M8HX DDR3 SDRAM. Upon information and belief, based on Mr. Silverman's April 18 letter and Plaintiffs' other communications detailed in Part C above, Micron does so with knowledge, or with willful blindness of the fact, that the

induced acts constitute infringement of the '853 patent. Upon information and belief, Micron intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

81. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Micron on notice of its infringement, Micron has contributed under 35 U.S.C. § 271(c) to direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase Micron's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent and that constitute a material part of the claimed invention, including, but not limited to, the MT46V16M16TG-75B DDR SDRAM, MT46V32M8TG DDR SDRAM, and MT41J128M8HX DDR3 SDRAM. Upon information and belief, Micron knew, based on Mr. Silverman's April 18 letter and Plaintiffs' other communications detailed in Part C above, that these products were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, Micron's semiconductor devices have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '853 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, each and every use of Micron's semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon

information and belief, when users power on Micron's semiconductor devices and/or products containing semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of Micron's semiconductor devices and/or products containing semiconductor devices cannot disable the infringing features of these products. Micron's semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of Micron's semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Similarly, Micron's products containing semiconductor devices also have no substantial non-infringing use, since they incorporate semiconductor devices with no substantial non-infringing use.

82. Upon information and belief, Micron's acts of infringement of the '853 patent have been willful and intentional. Upon information and belief, based on Mr. Silverman's April 18 letter and Plaintiffs' other communications detailed in Part C above, Micron acted with an objectively high likelihood that its actions constituted infringement of the '853 patent by refusing to take a license and continuing to sell its semiconductor-based products, including, but not limited to, the MT46V16M16TG-75B DDR SDRAM, MT46V32M8TG DDR SDRAM, and MT41J128M8HX DDR3 SDRAM, and the objectively-defined risk was either known or so obvious that it should have been known.

C. SanDisk's Infringement of the '853 Patent.

83. Upon information and belief, SanDisk has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the

United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the TC58NVG4D1DTG00 16G NAND Flash, TC58NVG3D4CTG00 NAND Flash, and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by SanDisk that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent. Upon information and belief, the iNAND and MLC NAND may also infringe the '853 patent.

84. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the TC58NVG4D1DTG00 16G NAND Flash and TC58NVG3D4CTG00 NAND Flash, also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '853 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, those semiconductor devices and/or products containing semiconductor devices.

85. Upon information and belief, SanDisk had knowledge of the '853 patent and its infringing conduct at least since September 17, 2008, when SanDisk was formally placed on notice of its infringement. Specifically, by letter to SanDisk's representative, Mr. Thompson, dated September 17, 2008, Plaintiffs' representative, Ms. Wongso, disclosed an exemplary claim chart for SanDisk's 16G NAND Flash TC58NVG4D1DTG00 and 8G NAND Flash TC58NVG3D3CTG00, each reading one or more claims of the '853 patent on the identified products.

86. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed SanDisk on notice of its infringement, SanDisk has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the TC58NVG4D1DTG00 16G NAND Flash and TC58NVG3D4CTG00 NAND Flash. Upon information and belief, based on Ms. Wongso's September 17 letter and Plaintiffs' other communications detailed in Part C above, SanDisk does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '853 patent. Upon information and belief, SanDisk intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

87. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed SanDisk on notice of its infringement, SanDisk has contributed under 35 U.S.C. § 271(c) to direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent and that constitute a material part of the claimed invention, including, but not limited to, the

TC58NVG4D1DTG00 16G NAND Flash and TC58NVG3D4CTG00 NAND Flash. Upon information and belief, SanDisk knew, based on Ms. Wongso's September 17 letter and Plaintiffs' other communications detailed in Part C above, that these products were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, SanDisk's semiconductor devices have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '853 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, each and every use of SanDisk's semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon information and belief, when users power on SanDisk's semiconductor devices and/or products containing semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of SanDisk's semiconductor devices and/or products containing semiconductor devices cannot disable the infringing features of these products. SanDisk's semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of SanDisk's semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Similarly, SanDisk's products containing semiconductor devices also have no substantial non-infringing use, since they incorporate semiconductor devices with no substantial non-infringing use.

88. Upon information and belief, SanDisk's acts of infringement of the '853 patent have been willful and intentional. Upon information and belief, based on Ms. Wongso's September 17 letter and Plaintiffs' other communications detailed in Part C above, SanDisk acted with an objectively high likelihood that its actions constituted infringement of the '853 patent by refusing to take a license and continuing to sell its semiconductor-based products,

including, but not limited to, the TC58NVG4D1DTG00 16G NAND Flash and TC58NVG3D4CTG00 NAND Flash, and the objectively-defined risk was either known or so obvious that it should have been known.

D. STMicro's Infringement of the '853 Patent.

89. Upon information and belief, STMicro has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the S550B1A CMOS Image Sensor, M59DR032A 32M Dual Block Flash, and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by STMicro that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent. Upon information and belief, the STM8S, ST6, ST7, μ PSD, ST10, STM32, STR7, STR9, ST19, ST21, ST23, ST32, M48T02, M48T08, M48T08Y, M48T12, M48T128Y, M48T129V, M48T129Y, M48T18, M48T35, M48T35AV, M48T35Y, M48T37V, M48T37Y, M48T512Y, M48T58, M48T58Y, M48T86, M440T1MV, M48T201V, M48T201Y, M48T212V, M48Z02, M48Z08, M48Z12, M48Z128, M48Z128Y, M48Z129V, M48Z18, M48Z2M1V, M48Z2M1Y, M48Z32V, M48Z35, M48Z35AV, M48Z35Y, M48Z512A, M48Z512AY, M48Z58, M48Z58Y, STA013, STA016A, STA015, STA016T, STA310, STA027, STA330, TDA7590, and STA331 may also infringe the '853 patent.

90. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase STMicro's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the S550B1A CMOS Image Sensor and M59DR032A 32M Dual Block Flash, also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '853 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, those semiconductor devices and/or products containing semiconductor devices.

91. Upon information and belief, STMicro had knowledge of the '853 patent and its infringing conduct at least since August 15, 2008, when STMicro was formally placed on notice of its infringement. Specifically, by letters to STMicro's representative, Mr. Ollivier, dated July 24 and August 15, 2008, Plaintiffs' representative, Mr. Silverman, identified the '853 patent and disclosed an exemplary list of products that required a license.

92. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed STMicro on notice of its infringement, STMicro has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase STMicro's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the S550B1A CMOS Image Sensor and M59DR032A 32M Dual Block Flash. Upon information and belief, based on Mr. Silverman's August 15 letter and Plaintiffs' other communications detailed in Part C above, STMicro does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '853 patent.

Upon information and belief, STMicro intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

93. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed STMicro on notice of its infringement, STMicro has contributed under 35 U.S.C. § 271(c) to direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase STMicro's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '853 patent and that constitute a material part of the claimed invention, including, but not limited to, the S550B1A CMOS Image Sensor and M59DR032A 32M Dual Block Flash. Upon information and belief, STMicro knew, based on Mr. Silverman's August 15 letter and Plaintiffs' other communications detailed in Part C above, that these products were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, STMicro's semiconductor devices have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '853 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, each and every use of STMicro's semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon information and belief,

when users power on STMicro's semiconductor devices and/or products containing semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of STMicro's semiconductor devices and/or products containing semiconductor devices cannot disable the infringing features of these products. STMicro's semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of STMicro's semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Similarly, STMicro's products containing semiconductor devices also have no substantial non-infringing use, since they incorporate semiconductor devices with no substantial non-infringing use.

94. Upon information and belief, STMicro's acts of infringement of the '853 patent have been willful and intentional. Upon information and belief, based on Mr. Silverman's August 15 letter and Plaintiffs' other communications detailed in Part C above, STMicro acted with an objectively high likelihood that its actions constituted infringement of the '853 patent by refusing to take a license and continuing to sell its semiconductor-based products, including, but not limited to, the S550B1A CMOS Image Sensor and M59DR032A 32M Dual Block Flash, and the objectively-defined risk was either known or so obvious that it should have been known.

E. Toshiba's Infringement of the '853 Patent.

95. Upon information and belief, Toshiba has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '853 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one

or more claims of the '853 patent, including, but not limited to, the TC58NVG4D1DTG00 NAND Flash, TC58NVG3D4CTG00 NAND Flash, TMP19A43FDXBG 32-Bit RISC MCU, and other similar semiconductor devices listed in Plaintiffs' Paragraph 2(a) disclosures and supplements thereto, and/or other system-level products made, used, sold, offered for sale, or imported by Toshiba that contain semiconductor devices that include all of the limitations of one or more claims of the '853 patent, including, but not limited to, the Compact Flash Card THNCF2G04DG, Flash Drive USB 2.0 NAND Flash, Memory 2.0 GB SD Card, and other similar system-level products listed in Plaintiffs' Paragraph 2(a) disclosures and supplements thereto (the "Toshiba Accused '853 Products").

96. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase the Toshiba Accused '853 Products also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '853 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, the Toshiba Accused '853 Products and/or system-level products containing the Toshiba Accused '853 Products, including, for example, automobiles, computers, tablets, mobile phones, cameras, media players, hard drives, USB drives, embedded storage devices, and/or memory cards. When incorporated as components in these third-party products, the Toshiba Accused '853 Products are referred to herein as the "Toshiba Accused '853 Components."

97. Upon information and belief, Toshiba had knowledge of the '853 patent and its infringing conduct at least since September 17, 2008, when Toshiba was formally placed on notice of its infringement. Specifically, by letter to Toshiba's representative, Mr. Mashimo, dated

September 17, 2008, Plaintiffs' representative, Ms. King, disclosed exemplary claim charts for Toshiba's 16G NAND Flash TC58NVG4D1DTG00 and 8G NAND Flash TC58NVG3D3CTG00, each reading one or more claims of the '853 patent on the identified products.

98. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Toshiba on notice of its infringement, Toshiba has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase the Toshiba Accused '853 Products. Upon information and belief, based on Ms. King's September 17 letter and Plaintiffs' other communications detailed in Part C above, Toshiba does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '853 patent. Upon information and belief, Toshiba intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

99. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Toshiba on notice of its infringement, Toshiba has contributed to the infringement of the '853 patent under 35 U.S.C. § 271(c) by selling and/or offering to sell within the United States, and/or importing into the United States, the Toshiba Accused '853 Components to third-party manufacturers, which include the Toshiba Accused '853 Components

as components in other system-level products, including, for example, automobiles, computers, tablets, mobile phones, printers, media players, hard drives, USB drives, embedded storage devices, and/or memory cards, that infringe the '853 patent when made, used, offered for sale, and/or sold in the United States, and/or imported into the United States. Upon information and belief, the Toshiba Accused '853 Components when included within an end product, constitute components of the infringing system-level product and are a material part of the claimed invention of the '853 patent. Upon information and belief, Toshiba knew, based on Ms. Nakagami-Sher's December 7 letter and Plaintiffs' other communications detailed in Part C above, that the Toshiba Accused '853 Components were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, the Toshiba Accused '853 Components have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '853 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, when the Toshiba Accused '853 Components are used in an infringing system-level product, each and every use of those products necessarily involves the infringing features of the '853 patent. Upon information and belief, when users power on the Toshiba Accused '853 Components, the infringing features of the '853 patent are activated and operate. Upon information and belief, users of the Toshiba Accused '853 Components cannot disable the infringing features of these products. Upon information and belief, the Toshiba Accused '853 Components do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of the Toshiba Accused '853 Components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

100. Upon information and belief, Toshiba's acts of infringement of the '853 patent have been willful and intentional. Upon information and belief, based on Ms. King's September 17 letter and Plaintiffs' other communications detailed in Part C above, Toshiba acted with an objectively high likelihood that its actions constituted infringement of the '853 patent by refusing to take a license and continuing to sell the Toshiba Accused '853 Products, and the objectively-defined risk was either known or so obvious that it should have been known.

COUNT II

Patent Infringement of U.S. Patent No. 5,391,949

101. Plaintiffs repeat and re-allege each and every allegation of paragraphs 1-100 as though fully set forth herein.

102. The '949 patent is valid and enforceable.

103. Micron, SanDisk, and Toshiba have at no time, either expressly or impliedly, been licensed under the '949 patent.

104. Upon information and belief, to the extent any marking or notice was required by 35 U.S.C. § 287, Plaintiffs have complied with the requirements of that statute by providing actual or constructive notice to Micron, SanDisk, and Toshiba of their alleged infringement. Upon information and belief, prior to July 4, 2008, no commercial products embodying the '949 patent were ever made, offered for sale, or sold within the United States with permission from, or under the authority of, Thunderbird and/or Plaintiffs. Upon information and belief, Plaintiffs surmise that any express licensees of the '949 patent have complied with the marking requirements of 35 U.S.C. § 287 by placing a notice of the '949 patent on all goods made, offered for sale, and/or sold within, and/or imported into, the United States that embody one or more claims of that patent.

A. Micron's Infringement of the '949 Patent.

105. Upon information and belief, Micron has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '949 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the MT9T012 Image Sensor and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Micron that contain semiconductor devices that include all of the limitations of one or more claims of the '949 patent. Upon information and belief, the MT9D111 may also infringe the '949 patent.

106. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase Micron's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the MT9T012 Image Sensor, also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '949 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, those semiconductor devices and/or products containing semiconductor devices.

107. Upon information and belief, Micron had knowledge of the '949 patent and its infringing conduct at least since April 18, 2008, when Micron was formally placed on notice of

its infringement. Specifically, by letter to Micron's representative, Mr. Appleton, dated April 18, 2008, Plaintiffs' representative, Mr. Silverman, provided an exemplary claim chart for Micron's MT9T012, reading one or more claims of the '949 patent on the identified product.

108. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Micron on notice of its infringement, Micron has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase Micron's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the MT9T012 Image Sensor. Upon information and belief, Micron does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '949 patent. Upon information and belief, Micron intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

109. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Micron on notice of its infringement, Micron has contributed under 35 U.S.C. § 271(c) to direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase Micron's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent

and that constitute a material part of the claimed invention, including, but not limited to, the MT9T012 Image Sensor. Upon information and belief, Micron knew, based on Mr. Silverman's April 18 letter and Plaintiffs' other communications detailed in Part C above, that these products were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, Micron's semiconductor devices have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '949 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, each and every use of Micron's semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon information and belief, when users power on Micron's semiconductor devices and/or products containing semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of Micron's semiconductor devices and/or products containing semiconductor devices cannot disable the infringing features of these products. Micron's semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of Micron's semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Similarly, Micron's products containing semiconductor devices also have no substantial non-infringing use, since they incorporate semiconductor devices with no substantial non-infringing use.

110. Upon information and belief, Micron's acts of infringement of the '949 patent have been willful and intentional. Upon information and belief, based on Mr. Silverman's April 18 letter and Plaintiffs' other communications detailed in Part C above, Micron acted with an objectively high likelihood that its actions constituted infringement of the '949 patent by refusing to take a license and continuing to sell its semiconductor-based products, including, but not

limited to, the MT9T012 Image Sensor, and the objectively-defined risk was either known or so obvious that it should have been known.

B. SanDisk's Infringement of the '949 Patent.

111. Upon information and belief, SanDisk has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '949 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the SDCE DLI Controller and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by SanDisk that contain semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the Memory Card 128 MB Secure Digital SD Card – SDSDB-128-A10 and other similar products. Upon information and belief, the Extreme III SD and SDHC Cards, Ultra II SD and SDHC Cards, Ultra II SD and SDHC Plus Cards, and SD Memory Card Family may also contain semiconductor devices that infringe the '949 patent.

112. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the SDCE DLI Controller and Memory Card 128 MB Secure Digital SD Card – SDSDB-128-A10, also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '949 patent by making, using, offering to

sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, those semiconductor devices and/or products containing semiconductor devices.

113. Upon information and belief, SanDisk had knowledge of the '949 patent and its infringing conduct at least since August 20, 2008, when SanDisk was formally placed on notice of its infringement. Specifically, by letter to SanDisk's representative, Mr. Thompson, dated August 20, 2008, Plaintiffs' representative, Ms. Wongso, provided exemplary claim charts for SanDisk's Controller SDCE and Memory Card 128MB Secure Digital SD Card, each reading one or more claims of the '949 patent on the identified products.

114. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed SanDisk on notice of its infringement, SanDisk has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the SDCE DLI Controller and Memory Card 128 MB Secure Digital SD Card – SDSDB-128-A10. Upon information and belief, based on Ms. Wongso's August 20 letter and Plaintiffs' other communications detailed in Part C above, SanDisk does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '949 patent. Upon information and belief, SanDisk intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these

products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

115. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed SanDisk on notice of its infringement, SanDisk has contributed under 35 U.S.C. § 271(c) to direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase SanDisk's semiconductor devices and/or products containing semiconductor devices that include all of the limitations of one or more claims of the '949 patent and that constitute a material part of the claimed invention, including, but not limited to, the SDCE DLI Controller and Memory Card 128 MB Secure Digital SD Card – SDSDB-128-A10. Upon information and belief, SanDisk knew, based on Ms. Wongso's August 20 letter and Plaintiffs' other communications detailed in Part C above, that these products were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, SanDisk's semiconductor devices have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '949 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, each and every use of SanDisk's semiconductor devices necessarily involves the infringing features of the patents-in-suit. Upon information and belief, when users power on SanDisk's semiconductor devices and/or products containing semiconductor devices, the infringing features of the patents-in-suit are activated and operate. Upon information and belief, users of SanDisk's semiconductor devices and/or products containing semiconductor devices cannot disable the infringing features of these products.

SanDisk's semiconductor devices do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of SanDisk's semiconductor devices would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Similarly, SanDisk's products containing semiconductor devices also have no substantial non-infringing use, since they incorporate semiconductor devices with no substantial non-infringing use.

116. Upon information and belief, SanDisk's acts of infringement of the '949 patent have been willful and intentional. Upon information and belief, based on Ms. Wongso's August 20 letter and Plaintiffs' other communications detailed in Part C above, SanDisk acted with an objectively high likelihood that its actions constituted infringement of the '949 patent by refusing to take a license and continuing to sell its semiconductor-based products, including, but not limited to, the SDCE DLI Controller and Memory Card 128 MB Secure Digital SD Card – SDSDB-128-A10, and the objectively-defined risk was either known or so obvious that it should have been known.

C. Toshiba's Infringement of the '949 Patent.

117. Upon information and belief, Toshiba has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '949 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the TMP19A43FDXBG 32-Bit RISC MCU and other similar semiconductor devices listed in Plaintiffs' Paragraph 2(a) disclosures and supplements thereto, and/or other system-level products made, used, sold,

offered for sale, or imported by Toshiba that contain semiconductor devices that include all of the limitations of one or more claims of the '949 patent, including, but not limited to, the Compact Flash Card THNCF2G04DG, Flash Drive USB 2.0 NAND Flash, Memory 2.0 GB SD Card, and other similar system-level products listed in Plaintiffs' Paragraph 2(a) disclosures and supplements thereto (the "Toshiba Accused '949 Products").

118. Upon information and belief, the third-party manufacturers, distributors, and consumers that purchase the Toshiba Accused '949 Products also directly infringe, either literally or under the doctrine of equivalents, under 35 U.S.C. § 271(a), the '949 patent by making, using, offering to sell, and/or selling to third-party distributors or consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, the Toshiba Accused '949 Products and/or system-level products containing the Toshiba Accused '949 Products, including, for example, automobiles, computers, tablets, mobile phones, cameras, media players, hard drives, USB drives, embedded storage devices, and/or memory cards. When incorporated as components in these third-party products, the Toshiba Accused '949 Products are referred to herein as the "Toshiba Accused '949 Components."

119. Upon information and belief, Toshiba had knowledge of the '949 patent and its infringing conduct at least since December 7, 2009, when Toshiba was formally placed on notice of its infringement. Specifically, by letter to Toshiba's representative, Mr. Mashimo, dated December 7, 2009, Plaintiffs' representative, Ms. Nakagami-Sher, provided an exemplary claim chart for Toshiba's 32-bit RISC MCU TMP19A43FDXBG, reading one or more claims of the '949 patent on the identified product.

120. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Toshiba on notice of its infringement, Toshiba has actively induced under 35 U.S.C. § 271(b) direct infringement by the third-party manufacturers, distributors, and/or consumers that purchase the Toshiba '949 Accused Products. Upon information and belief, based on Ms. Nakagami-Sher's December 7 letter and Plaintiffs' other communications detailed in Part C above, Toshiba does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '949 patent. Upon information and belief, Toshiba intends to cause, and has taken affirmative steps to induce, infringement by these third-party manufacturers, distributors, and/or consumers by, *inter alia*, creating advertisements that promote the infringing use of these products, creating established distribution channels for these products into the United States, manufacturing these products in conformity with U.S. laws and regulations, distributing or making available datasheets, instructions, or manuals for these products to these purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

121. Upon information and belief, since at least the above-mentioned date when Plaintiffs formally placed Toshiba on notice of its infringement, Toshiba has contributed to the infringement of the '949 patent under 35 U.S.C. § 271(c) by selling and/or offering to sell within the United States, and/or importing into the United States, the Toshiba Accused '949 Components to third-party manufacturers, which include the Toshiba Accused '949 Components as components in other system-level products, including, for example, automobiles, computers, tablets, mobile phones, printers, media players, hard drives, USB drives, embedded storage devices, and/or memory cards, that infringe the '949 patent when made, used, offered for sale, and/or sold in the United States, and/or imported into the United States. Upon information and

belief, the Toshiba Accused '949 Components when included within an end product, constitute components of the infringing system-level product and are a material part of the claimed invention of the '949 patent. Upon information and belief, Toshiba knew, based on Ms. Nakagami-Sher's December 7 letter and Plaintiffs' other communications detailed in Part C above, that the Toshiba Accused '949 Components were especially made or especially adapted for use in an infringing manner and not staple articles of commerce suitable for substantial non-infringing uses. Upon information and belief, the Toshiba Accused '949 Components have no substantial non-infringing use, since they incorporate the fundamental inventions covered by the '949 patent to perform their functions faster, more efficiently, and/or with less noise. Upon information and belief, when the Toshiba Accused '949 Components are used in an infringing system-level product, each and every use of those products necessarily involves the infringing features of the '949 patent. Upon information and belief, when users power on the Toshiba Accused '949 Components, the infringing features of the '949 patent are activated and operate. Upon information and belief, users of the Toshiba Accused '949 Components cannot disable the infringing features of these products. Upon information and belief, the Toshiba Accused '949 Components do not have any substantial non-infringing uses. Alternatively, upon information and belief, any non-infringing use of the Toshiba Accused '949 Components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

122. Upon information and belief, Toshiba's acts of infringement of the '949 patent have been willful and intentional. Upon information and belief, based on Ms. Nakagami-Sher's December 7 letter and Plaintiffs' other communications detailed in Part C above, Toshiba acted with an objectively high likelihood that its actions constituted infringement of the '949 patent by

refusing to take a license and continuing to sell the Toshiba Accused '949 Products, and the objectively-defined risk was either known or so obvious that it should have been known.

COUNT III

Patent Infringement of U.S. Patent No. 5,247,212

123. Plaintiffs repeat and re-allege each and every allegation of paragraphs 1-122 as though fully set forth herein.

124. The '212 patent is valid and enforceable.

125. Micron has at no time, either expressly or impliedly, been licensed under the '212 patent.

126. Upon information and belief, to the extent any marking or notice was required by 35 U.S.C. § 287, Plaintiffs have complied with the requirements of that statute by providing actual or constructive notice to Micron of its alleged infringement. Upon information and belief, prior to July 4, 2008, no commercial products embodying the '212 patent were ever made, offered for sale, or sold within the United States with permission from, or under the authority of, Thunderbird and/or Plaintiffs. Upon information and belief, Plaintiffs surmise that any express licensees of the '212 patent have complied with the marking requirements of 35 U.S.C. § 287 by placing a notice of the '212 patent on all goods made, offered for sale, and/or sold within, and/or imported into, the United States that embody one or more claims of that patent.

A. Micron's Infringement of the '212 Patent.

127. Upon information and belief, Micron has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, the '212 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that

include all of the limitations of one or more claims of the '212 patent, including, but not limited to, the MT49H16M18CFM-33, MT42L128M32D2KL-3 IT, MT45W4MW16PCGA-70 IT, MT5VDDT1672AY-40BK1, MT47H32M16HW-25E AAT:G, MT4VDDT3264HIY-335J1, MT72HTS1G72FZ-80EH1D6, MT36HTF25672PZ-667, MT18HTF51272PDZ-80EC1, MT16KTF51264AZ-1G6M1, MT48H4M16LFB4-75, and other similar semiconductor devices.

128. Upon information and belief, Micron knew or should have known, or acted with willful blindness, of the '212 patent and its infringing conduct at least since April 18, 2008, when Micron was formally placed on notice of its infringement. Specifically, by letter dated April 11, 2008, Plaintiffs' representative, Mr. Silverman, provided Micron's representative, Mr. Appleton, with a copy of the '212 patent and, by letter dated April 18, 2008, Mr. Silverman informed Mr. Appleton, that the MT46V32M8TG and other similar products infringed one or more of the patents in the Fast Logic Portfolio.

COUNT IV

Patent Infringement of U.S. Patent No. 5,001,367

129. Plaintiffs repeat and re-allege each and every allegation of paragraphs 1-128 as though fully set forth herein.

130. The '367 patent is valid and enforceable.

131. Elpida, SK Hynix, Micron, and Toshiba have at no time, either expressly or impliedly, been licensed under the '367 patent.

132. Upon information and belief, to the extent any marking or notice was required by 35 U.S.C. § 287, Plaintiffs have complied with the requirements of that statute by providing actual or constructive notice to Elpida, Micron, and Toshiba of their alleged infringement. Upon information and belief, prior to July 4, 2008, no commercial products embodying the '367 patent

were ever made, offered for sale, or sold within the United States with permission from, or under the authority of, Thunderbird and/or Plaintiffs. Upon information and belief, Plaintiffs surmise that any express licensees of the '367 patent have complied with the marking requirements of 35 U.S.C. § 287 by placing a notice of the '367 patent on all goods made, offered for sale, and/or sold within, and/or imported into, the United States that embody one or more claims of that patent.

A. Elpida's Infringement of the '367 Patent.

133. Upon information and belief, Elpida has been directly and literally infringing under 35 U.S.C. § 271(a) and/or indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '367 patent by making, using, offering to sell, and/or selling to customers and/or distributors (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '367 patent, including, but not limited to, the EDD5108ABTA-6B DDR SDRAM and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Elpida that contain semiconductor devices that include all of the limitations of one or more claims of the '367 patent. Upon information and belief, the EDD5116AFTA-6B-E, EDD2516AKTA-6B, EDD2516AKTA-6BTI, EDD45128163G5, EDD1232AAFA-7A-E, EDD45128841G5, EDD2516AKTA-6BTI-E, EDD5108ADTA, EDD2508AKTA-5C, EDD2508AKTA-5B, EDD2508AMTA, EDD1218AATA, EDD5108AFTA-5B, EDD2516AKTA-6B-E, EDD45128163G5-A75-9JF, EDJ1104BASE, EDJ1108BABG, EDJ1108BASE, EDJ1116BABG, EDEJ1116BASE, EBJ21UE8BASA, EBJ21UE8BAU0, EBJ11UE6BASA, EBJ11UE6BAU0, EBJ82HF4B1RA, EBJ41HE4BAFA, EBJ41RE4BAFA, EBJ42RE8BAFA, EBJ20RE4BAFA, EBJ21RE8BAFA,

EBJ10RE8BAFA, EBJ21UE8BAFA, EBJ21UE8BAW0, EBJ21EE8BAFA, EBJ10UE8BAFA, EBJ10UE8BAW0, EBJ10EE8BAFA, EBJ10EE8BAW0, EBJ10EE8BAWA, EDE2104ABSE, EDE2108ABSE, EDE2116ABSE, EDE1104ABSE, EDE1104ACSE, EDE1108ABSE, EDE1108ACBG, EDE1108ACSE, EDE1116ABSE, EDE1116ACBG, EDE116ACSE, EDE1116ACSE-6E-E, EDE5108AGBG, EDE5108AGBG-6E-E, EDE5108AJBG, EDE5108AJSE, EDE5116AHSE, EDE5116AJBG, EDE5116AJSE, EDE2508AEBG, EDE2516AEBG, EBE81AF4ABHA, EBE82AF4A1RA, EBE41AE4ABHA, EBE41AE4ACFA, EBE41RE4ABHA, EBE41RE4ACFA, EBE20AE4ABFA, EBE20AE4ACFA, EBE20RE4ABFA, EBE20RE4ACFA, EBE21AD4AJFA, EBE21RD4AJFA, EBE10AD4AJFA, EBE10AE8ACFA, EBE10RD4AJFA, EBE10RE8ACFA, EBE51AD8AJFA, EBE51RD8AJFA, EBE41UF8ABFA, EBE41EF8ABFA, EBE21UE8ABFA, EBE21UE8ACFA, EBE21UE8ACWA, EBE21EE8ABFA, EBE21EE8ACFA, EBE21EE8ACWA, EBE10UE8ACFA, EBE10UE8ACWA, EBE11UD8AHFA, EBE11UD8AHWA, EBE11UD8AJWA, EBE10EE8ACFA, EBE10EE8ACWA, EBE11ED8AJWA, EBE51UD8AJWA, EBE51ED8AJWA, EBE41UF8ABDA, EBE21UE8ABDA, EBE21UE8ACSA, EBE21UE8ACUA, EBE11UD8AJUA, EBE11UE6ACSA, EBE11UE6ACUA, EBE52UD6AJUA, EBE81FF4ABHT, EBE82FF4A1RQ, EBE41FE4ABHD, EBE41FE4ACFT, EBE21FD4AJFT, EBE21FE8ACFT, EBE10FE8ACFT, EBE11FD8AJFT, EBE51FD8AJFT, EDS6416AHTA-75-E, EDS2532JE-75-E, EDS1216AATA-75-E, EDS1232EC-75, EDS2532EE75E, EDS6416AHTA-6BEH, EDS6416GHTA-10-E, EDS641GHTA-10-E, EDS2516ADTA-75-E, and EDS2518ADTA-75-E may also infringe the '367 patent.

134. Upon information and belief, Elpida has been directly and equivalently infringing under 35 U.S.C. § 271(a) and/or indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '367 patent by making, using, offering to sell, and/or selling to customers and/or distributors (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '367 patent, including, but not limited to, the EDD5108ABTA-6B DDR SDRAM and other similar semiconductor devices, and/or other products made, used, sold, offered for sale, or imported by Elpida that contain semiconductor devices that include all of the limitations of one or more claims of the '367 patent. Upon information and belief, the EDD5116AFTA-6B-E, EDD2516AKTA-6B, EDD2516AKTA-6BTI, EDD45128163G5, EDD1232AAFA-7A-E, EDD45128841G5, EDD2516AKTA-6BTI-E, EDD5108ADTA, EDD2508AKTA-5C, EDD2508AKTA-5B, EDD2508AMTA, EDD1218AATA, EDD5108AFTA-5B, EDD2516AKTA-6B-E, EDD45128163G5-A75-9JF, EDJ1104BASE, EDJ1108BABG, EDJ1108BASE, EDJ1116BABG, EDEJ1116BASE, EBJ21UE8BASA, EBJ21UE8BAU0, EBJ11UE6BASA, EBJ11UE6BAU0, EBJ82HF4B1RA, EBJ41HE4BAFA, EBJ41RE4BAFA, EBJ42RE8BAFA, EBJ20RE4BAFA, EBJ21RE8BAFA, EBJ10RE8BAFA, EBJ21UE8BAFA, EBJ21UE8BAW0, EBJ21EE8BAFA, EBJ10UE8BAFA, EBJ10UE8BAW0, EBJ10EE8BAFA, EBJ10EE8BAW0, EBJ10EE8BAWA, EDE2104ABSE, EDE2108ABSE, EDE2116ABSE, EDE1104ABSE, EDE1104ACSE, EDE1108ABSE, EDE1108ACBG, EDE1108ACSE, EDE1116ABSE, EDE1116ACBG, EDE116ACSE, EDE1116ACSE-6E-E, EDE5108AGBG, EDE5108AGBG-6E-E, EDE5108AJBG, EDE5108AJSE, EDE5116AHSE, EDE5116AJBG, EDE5116AJSE, EDE2508AEBG,

EDE2516AEBG, EBE81AF4ABHA, EBE82AF4A1RA, EBE41AE4ABHA, EBE41AE4ACFA, EBE41RE4ABHA, EBE41RE4ACFA, EBE20AE4ABFA, EBE20AE4ACFA, EBE20RE4ABFA, EBE20RE4ACFA, EBE21AD4AJFA, EBE21RD4AJFA, EBE10AD4AJFA, EBE10AE8ACFA, EBE10RD4AJFA, EBE10RE8ACFA, EBE51AD8AJFA, EBE51RD8AJFA, EBE41UF8ABFA, EBE41EF8ABFA, EBE21UE8ABFA, EBE21UE8ACFA, EBE21UE8ACWA, EBE21EE8ABFA, EBE21EE8ACFA, EBE21EE8ACWA, EBE10UE8ACFA, EBE10UE8ACWA, EBE11UD8AHFA, EBE11UD8AHWA, EBE11UD8AJWA, EBE10EE8ACFA, EBE10EE8ACWA, EBE11ED8AJWA, EBE51UD8AJWA, EBE51ED8AJWA, EBE41UF8ABDA, EBE21UE8ABDA, EBE21UE8ACSA, EBE21UE8ACUA, EBE11UD8AJUA, EBE11UE6ACSA, EBE11UE6ACUA, EBE52UD6AJUA, EBE81FF4ABHT, EBE82FF4A1RQ, EBE41FE4ABHD, EBE41FE4ACFT, EBE21FD4AJFT, EBE21FE8ACFT, EBE10FE8ACFT, EBE11FD8AJFT, EBE51FD8AJFT, EDS6416AHTA-75-E, EDS2532JE-75-E, EDS1216AATA-75-E, EDS1232EC-75, EDS2532EE75E, EDS6416AHTA-6BEH, EDS6416GHATA-10-E, EDS641GHATA-10-E, EDS2516ADTA-75-E, and EDS2518ADTA-75-E may also infringe the '367 patent. These semiconductor devices and/or products containing these semiconductor devices perform substantially the same function as the inventions embodied in one or more claims of the '367 patent in substantially the same way to achieve the same result.

135. Upon information and belief, these semiconductor devices and/or products containing these semiconductor devices have no substantial non-infringing uses, and Elpida had knowledge of the non-staple nature of these semiconductor devices and/or products containing these semiconductor devices and the '367 patent throughout the entire period of its infringing

conduct or at least by April 18, 2008, when Elpida was formally placed on notice of its infringement.

B. Micron's Infringement of the '367 Patent.

136. Upon information and belief, Micron has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, the '367 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '367 patent, including, but not limited to, the MT47H32M16HW-25E AAT:G, MT4VDDT3264HIY-335J1, and other similar semiconductor devices.

137. Upon information and belief, Micron knew or should have known, or acted with willful blindness, of the '367 patent and its infringing conduct at least since April 18, 2008, when Micron was formally placed on notice of its infringement. Specifically, by letter dated April 11, 2008, Plaintiffs' representative, Mr. Silverman, provided Micron's representative, Mr. Appleton, with a copy of the '367 patent and, by letter dated April 18, 2008, Mr. Silverman informed Mr. Appleton, that the MT46V32M8TG and other similar products infringed one or more of the patents in the Fast Logic Portfolio.

C. Toshiba's Infringement of the '367 Patent.

138. Upon information and belief, Toshiba has been directly infringing under 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, indirectly infringing, by way of inducement with specific intent under 35 U.S.C. § 271(b) and/or contributory infringement under 35 U.S.C. § 271(c), the '367 patent by making, using, offering to sell, and/or selling to third-party manufacturers, distributors, and consumers (directly or through intermediaries and/or

subsidiaries) in this District and elsewhere within the United States and/or importing into the United States, without authority, semiconductor devices that include all of the limitations of one or more claims of the '367 patent, including, but not limited to, the TMP86FM48FG and other similar products listed in Plaintiffs' Paragraph 2(a) disclosures and supplements thereto.

139. Upon information and belief, Toshiba knew or should have known, or acted with willful blindness, of the '367 patent and its infringing conduct at least since December 7, 2009, when Toshiba was formally placed on notice of its infringement. Specifically, by letter dated June 16, 2008, Plaintiffs' representative, Mr. Silverman, provided Toshiba's representative, Mr. Miyauchi, with a copy of the '367 patent and, by letter dated December 7, 2009, Ms. Nakagami-Sher informed Mr. Mashimo, that the 32-bit RISC MCU TMP19A43FDXBG and other similar products infringed one or more of the patents in the Fast Logic Portfolio.

140. Upon information and belief, Elpida's acts of infringement of the '367 patent have been willful and intentional.

141. As a direct and proximate result of these acts of patent infringement, Elpida, Micron, and Toshiba have encroached on the exclusive rights of Plaintiffs and their licensees to practice the '367 patent, for which Plaintiffs are entitled to at least a reasonable royalty.

CONCLUSION

142. Plaintiffs are entitled to recover from Defendants the damages sustained by Plaintiffs as a result of Defendants' wrongful acts in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court.

143. Plaintiffs have incurred and will incur attorneys' fees, costs, and expenses in the prosecution of this action. The circumstances of this dispute create an exceptional case within the

meaning of 35 U.S.C. § 285, and Plaintiffs are entitled to recover their reasonable and necessary attorneys' fees, costs, and expenses.

JURY DEMAND

144. Plaintiffs hereby request a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

145. Plaintiffs respectfully request that the Court find in their favor and against Defendants, and that the Court grant Plaintiffs the following relief:

- A. A judgment that each Defendant has infringed the patents-in-suit as alleged herein, directly and/or indirectly by way of inducing or contributing to infringement of such patents;
- B. A judgment for an accounting of all damages sustained by Plaintiffs as a result of the acts of infringement by each Defendant;
- C. A judgment and order requiring each Defendant to pay Plaintiffs damages under 35 U.S.C. § 284, including up to treble damages for willful infringement as provided by 35 U.S.C. § 284, and any royalties determined to be appropriate;
- D. A judgment and order requiring each Defendant to pay Plaintiffs pre-judgment and post-judgment interest on the damages awarded;
- E. A judgment and order finding this to be an exceptional case and requiring each Defendant to pay the costs of this action (including all disbursements) and attorneys' fees as provided by 35 U.S.C. § 285; and
- F. Such other and further relief as the Court deems just and equitable.

Dated: September 19, 2014

Respectfully submitted,

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