

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

**In the Matter of**

**CERTAIN NON-VOLATILE MEMORY  
DEVICES AND PRODUCTS CONTAINING  
SAME**

Inv. No. 337-TA-\_\_\_\_\_

**VERIFIED COMPLAINT OF MACRONIX INTERNATIONAL CO., LTD. AND  
MACRONIX AMERICA, INC. UNDER SECTION 337 OF THE TARIFF ACT OF 1930,  
AS AMENDED**

**Complainants:**

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**Proposed Respondents:**

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- Ex. 2** Certified copy of U.S. Patent No. 6,788,602
- Ex. 3** Certified copy of U.S. Patent No. 8,035,417
- Ex. 4** Certified Copy of Recorded Assignment for U.S. Patent No. 6,552,360
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- Ex. 7** Macronix International Co., Ltd. and Subsidiaries Consolidated Financial Statements for the Nine Months Ended June 30, 2016 and 2015 and Independent Auditors' Report
- Ex. 8** Macronix.com - Offices, from <http://www.macronix.com/en-us/Sales/WorldwideService/Pages/Offices.aspx>
- Ex. 9** Toshiba Corporation, 2015 Annual Report Operational Review
- Ex. 10** Inside Toshiba America, from [http://www.toshiba.com/tai/about\\_us.jsp](http://www.toshiba.com/tai/about_us.jsp)
- Ex. 11** Companies and Businesses – Toshiba America, from [http://www.toshiba.com/tai/about\\_us\\_companies.jsp](http://www.toshiba.com/tai/about_us_companies.jsp)
- Ex. 12** Fast Facts: Toshiba Semiconductor & Storage Products – United States, from <http://toshiba.semiconstorage.com/us/company/taec/newscenter/mrfacts.html>
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- Ex. 14** Toshiba Information Equipment (Philippines), Inc. (TIP), from <http://toshiba.semicon-storage.com/ap-en/company/world-wide/omc/tip.html>
- Ex. 15** Toshiba Semiconductor & Storage Products: Sales Contacts in California, from <http://www.toshiba.com/taec/sales/offices.jsp?country=us&state=CA>
- Ex. 16** Toshiba America Information Systems, Inc., Contact Us , from <http://us.toshiba.com/company/contact-us>
- Ex. 17** Toshiba Semiconductor Catalog March 2016
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- Ex. 19** Toshiba NVM Datasheet Tx58TEGxDDKTAx0
- Ex. 20** Toshiba NVM Datasheet Tx58TEGxDCJTAx0
- Ex. 21** Toshiba NAND Flash Memory, from <https://toshiba.semicon-storage.com/us/product/memory/nand-flash.html>

**Confidential Exhibits**

- Ex. 22C** U.S. Patent No. 6,552,360 – Infringement Claim Charts for Toshiba NVM
- Ex. 23C** U.S. Patent No. 6,788,602 – Infringement Claim Charts for Toshiba NVM
- Ex. 24C** U.S. Patent No. 8,035,417 – Infringement Claim Charts for Toshiba NVM
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## APPENDICES

- App. A** Certified copy of the prosecution history of U.S. Patent No. 6,552,360
- App. B** Certified copy of the prosecution history of U.S. Patent No. 6,788,602
- App. C** Certified copy of the prosecution history of U.S. Patent No. 8,035,417
- App. D** Four copies of each technical reference identified in the prosecution history of U.S. Patent No. 6,552,360
- App. E** Four copies of each technical reference identified in the prosecution history of U.S. Patent No. 6,788,602
- App. F** Four copies of each technical reference identified in the prosecution history of U.S. Patent No. 8,035,417



## I. INTRODUCTION

1. This Complaint is filed by Macronix International Co., Ltd. and Macronix America, Inc. (collectively, “Macronix” or “Complainants”) pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, based on the unlawful importation into the United States, the sale for importation, and the sale within the United States after importation, of certain non-volatile memory devices and products containing the same, that infringe one or more claims of U.S. Patent Nos. 6,552,360 (“the ’360 Patent”), 6,788,602 (“the ’602 Patent”), and 8,035,417 (“the ’417 Patent”) (collectively, “the Asserted Patents”). A certified copy of each of the Asserted Patents is attached as Exhibit Nos. 1, 2, and 3, respectively.

2. Macronix International Co., Ltd. owns all rights, title, and interest in each of the Asserted Patents. A certified copy of the recorded assignments for each of the Asserted Patents is attached as Exhibit Nos. 4, 5, and 6, respectively. A certified copy of the prosecution history for each of the Asserted Patents is attached as Appendices A, B, and C, respectively.

3. The Proposed Respondents are Toshiba Corporation, Toshiba Information Equipment (Philippines), Inc., Toshiba America, Inc., Toshiba America Electronic Components, Inc., and Toshiba America Information Systems, Inc., (individually or collectively “Toshiba” or the “Toshiba Respondents”).

4. As required under Commission Rule 210.12(a)(12), a clear statement in plain English of the category of products accused is as follows. The accused Toshiba devices are certain non-volatile memory devices (“Accused NVM”), specifically Toshiba’s flash memory

chips.<sup>1</sup> The Accused NVM are used by Toshiba in a variety of products, including memory cards, solid-state drives, wearable devices, digital camcorders, mobile devices, advanced audiovisual systems, car navigation systems, computers, servers, and other consumer electronics (collectively the “Accused Downstream Products”) (“Accused NVM” and “Accused Downstream Products” are collectively “Accused Products”). As Toshiba does not appear to publicly identify its products that incorporate Accused NVM, discovery will be necessary to confirm the entire range of Accused Downstream Products that are infringing. On information and belief, the Accused Products are manufactured and/or sold for importation into the United States, imported into the United States, or sold within the United States after importation by or on behalf of Toshiba and other entities.

5. Macronix asserts that the Accused Products infringe claims 1, 2, 3, 4, 5, 6, 7, and 8, of the ’360 Patent; claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 16 of the ’602 Patent; and claims 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 16, and 18 of the ’417 Patent. In summary, the proposed Toshiba Respondents infringe at least the patents and claims listed in the chart below (dependent claims are contained in parentheses).

<b>U.S. Patent No.</b>	<b>Asserted Claims</b>
’360 Patent	1 (2, 3, 4, 5, 6, 7, 8)
’602 Patent	1 (2, 3, 4, 5, 6); 7 (8, 9, 10); 11 (12, 16)
’417 Patent	1 (2, 3, 4, 5, 6, 7); 11 (12, 13, 14, 15, 16); 18

<sup>1</sup> As examples only, Toshiba’s accused non-volatile memory devices include TC58NVG1S3HTA00, TC58NVG3S0FTA00, TH58TEG7DCJTA20, TC58TEG6DDKTA00, and TH58TEG8DDKTA20.

6. As required by 19 U.S.C. § 1337(a)(2) and (3), an industry in the United States relating to articles protected by the Asserted Patents exists or is in the process of being established.

7. Macronix seeks a permanent limited exclusion order, specifically directed to each named Respondent and its subsidiaries and affiliates, barring from entry into the United States all infringing Toshiba non-volatile memory devices and products containing the same. Macronix also seeks cease and desist orders directed to each named Respondent prohibiting their sale for importation, importation, sale after importation, use, offer for sale, sale, distribution, advertising, or any other commercial activity related to infringing non-volatile memory devices and products containing the same.

## II. COMPLAINANTS

8. Macronix America, Inc. was originally established in 1982 in San Jose, California to research, design, manufacture, and sell non-volatile memory devices. Macronix America Inc. was later reorganized so that the corporate parent is Macronix International Co., Ltd., with Macronix America, Inc. being a wholly-owned subsidiary. Today, Macronix is a leading innovator of non-volatile memory solutions. *See* Ex. 7 (Macronix International Co., Ltd. and Subsidiaries Consolidated Financial Statements for the Nine Months Ended September 30, 2016 and 2015 and Independent Auditors' Report) at 9.

9. Macronix International Co., Ltd. ("Macronix Taiwan") is a corporation organized under the laws of Taiwan, having its principal place of business at No. 16, LiHsin Road, Science Park, Hsin-chu, Taiwan. *See* Ex. 7 at 9; Ex. 8 (Macronix.com - Offices). Macronix Taiwan has been listed on the Taiwan Stock Exchange since 1995. Ex. 7 at 9. In the first nine months of 2016, Macronix Taiwan generated over \$553 million from sales of its products. *Id.* at 4.

10. Macronix America, Inc. (“Macronix America”) is a wholly-owned subsidiary of Macronix Taiwan, existing under the laws of the State of California, and headquartered at 680 North McCarthy Boulevard, Milpitas, California 95035.

11. Macronix is a leading innovator of non-volatile memory semiconductor solutions. Led by scientists, engineers, and researchers, Macronix dedicates a substantial portion of its revenue, more than \$150 million in 2015, more than \$200 million in 2014, and more than \$170 million in 2013, to research and development of non-volatile memory, and regularly publishes and presents technical papers in major international conferences to help bring the next generation of non-volatile memory to consumers around the world. *See, e.g., Ex. 25C (Domestic Industry Data).*

12. Macronix has made substantial investments in protecting its intellectual property. Macronix has over 5,000 patents issued to it worldwide, including over 2,000 United States patents. According to a 2011 study by the Patent Board™, among the 240 semiconductor companies evaluated, Macronix’s patent portfolio was ranked 18<sup>th</sup> worldwide and was 1<sup>st</sup> in the Taiwanese semiconductor industry.

13. Macronix America focuses on supporting Macronix products in the United States. Macronix America works with certain chipset vendor (CSV) customers to understand their requirements for NVM in their respective current and future products, ensuring that Macronix NVM meet CSV specifications. Customer engineers, design teams, and architecture teams, work with other Macronix engineers in Taiwan to ensure that Macronix’s next generation NVM meet the customers’ future requirements.

14. Macronix's confidential licensees conduct in the United States certain research and development, engineering, manufacturing, and technical support of products based on Macronix technologies.

### **III. PROPOSED RESPONDENTS**

15. On information and belief, Toshiba Corporation and its affiliated entities design, manufacture, and/or sell Accused NVM made at facilities located in Japan. *See* Ex. 9 (Toshiba Corporation, 2015 Annual Report Operational Review) at 24. On information and belief, the Accused NVM are assembled, packaged, and/or tested abroad prior to importation into the United States.

16. On information and belief, Toshiba Corporation was established in 1875 in Japan. *See id.* at 67. The "Toshiba Respondents" include various Toshiba entities that collectively manufacture, sell for importation into the United States, import, and/or sell within the United States after importation the Accused Products, including Toshiba Corporation, Toshiba America, Inc., Toshiba America Electronic Components, Inc., Toshiba America Information Systems, Inc., and Toshiba Information Equipment (Philippines), Inc. As explained below, such non-volatile memory devices manufactured by or on behalf of the Toshiba Respondents, and products containing the same, infringe the Asserted Patents. With respect to the Toshiba Respondents, Macronix alleges the following upon information and belief:

#### **A. Toshiba Corporation**

17. Toshiba Corporation is a corporation organized under the laws of Japan, having its principal place of business at Shibaura 1-Chome Minato-ku, Tokyo, Japan. *See id.* Toshiba Corporation manufactures, sells for importation into the United States, and/or sells within the United States after importation the Accused NVM. *See id.* at 24, 38.

18. On information and belief, Toshiba Corporation operates a semiconductor fabrication facility in Yokkaichi, Japan, that manufactures Accused NVM. *See id.* at 24; *see also* Ex. 17 (Toshiba Semiconductor Catalog March 2016) at 17 (“Toshiba manufactures all its NAND Flash Memories at its Yokkaichi Operations in order to maintain their quality.”). On information and belief, Accused NVM fabricated at the Yokkaichi, Japan facility are packaged, assembled, and/or incorporated into downstream products at facilities abroad, and then imported into the United States. *See* Ex. 18 (Purchase Receipts and Photographs of Accused Products).<sup>2</sup>

**B. Toshiba Information Equipment (Philippines), Inc. (“TIP”)**

19. TIP is a wholly owned subsidiary of Toshiba Corporation. *See* Ex. 14 (Toshiba Information Equipment (Philippines), Inc. (TIP)). On information and belief, TIP is organized under the laws of the Philippines and maintains offices at 103 East Main Ave. Ext., Special Export Processing Zone, Laguna Technopark, Binan, Laguna, Philippines 4024. *Id.* TIP is an overseas manufacturing company, producing products that include 2.5 inch and 1.8 in Hard Disk Drives, Solid State Drives, and e-PCB. *See id.* On information and belief, TIP manufactures, sells for importation into the United States, imports, and/or sells within the United States after importation products containing the Accused NVM. *See id.*

**C. Toshiba America, Inc. (“TAI”)**

20. TAI is a wholly owned subsidiary of Toshiba Corporation. *See* Ex. 10 (Inside Toshiba America) at 2. Upon information and belief, TAI is organized under the laws of Delaware and maintains offices at 1251 Avenue of the Americas, Suite 4110, New York, NY

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<sup>2</sup> In late January 2017, Toshiba Corporation announced plans to split its memory business into a separate company. *See* [http://www.toshiba.co.jp/about/ir/en/news/20170127\\_1.pdf](http://www.toshiba.co.jp/about/ir/en/news/20170127_1.pdf). This plan is subject to approval of Toshiba’s shareholders. Because the new spin-off company does not yet exist, Macronix has not named this company as a proposed respondent. But Macronix plans to move to amend the complaint to add any such spin-off company once it is created.

10020. *Id.* On information and belief, TAI is the holding company of six Toshiba operating companies that offer a broad range of products and solutions for the residential, commercial, and industrial sectors. *Id.* Upon information and belief, under the direction of TAI, the Accused Products are sold for importation into the United States, imported and/or sold within the United States. *See id.*

**D. Toshiba America Electronic Components, Inc. (“TAEC”)**

21. TAEC is a wholly owned subsidiary of TAI. *See* Ex. 11 (Companies and Businesses – Toshiba America) at 2-3; Ex. 13 (Company Overview – Toshiba America Electronic Components, Inc.). On information and belief, TAEC is organized under the laws of California and maintains offices at 9740 Irvine Boulevard, Suite D700, Irvine, CA 92618. *See* Ex. 12 (Fast Facts: Toshiba Semiconductor & Storage Products – United States) at 2. TAEC’s principal business is engineering, marketing, and sales of Toshiba semiconductors and storage products. *See id.* Upon information and belief, TAEC sells for importation into the United States, imports, and/or sells within the United States after importation the Accused Products. *See id.*

**E. Toshiba America Information Systems, Inc. (“TAIS”)**

22. Toshiba America Information Systems, Inc. (“TAIS”) is a wholly owned subsidiary of TAI. *See* Ex. 10; Ex. 11. On information and belief, TAIS is organized under the laws of California and maintains offices at 9740 Irvine Boulevard, Irvine, CA 92618. *See* Ex. 16 (TAIS – Contact Us). TAIS’s principal business is sales, marketing, and distribution of consumer electronics products and solutions, including laptops, tablets, hard drives, and memory cards. *See* Ex. 11; *see also* Ex. 16. Upon information and belief, TAIS sells for importation into

the United States, imports, and/or sells within the United States after importation the Accused Products. *See id.*

### **III. TECHNOLOGY AND PRODUCTS AT ISSUE**

23. The technologies at issue relate generally to various aspects of non-volatile memory, such as flash memory, and products containing same. Non-volatile memory retains information even in the absence of a power source for extended periods of time. For example, in smartphones, personal information such as names and telephone numbers and multimedia, such as music, video, and photos can be stored in the phone's non-volatile memory and will remain in that memory even when the phone is turned off. In contrast, volatile memory, such as dynamic random-access memory ("DRAM"), loses data if electrical power is removed.

24. Macronix's U.S. Patent No. 6,552,360 describes circuit layouts on a substrate of a semiconductor device suitable for fabrication using a chemical mechanical polishing ("CMP") process.

25. Macronix's U.S. Patent No. 6,788,602 describes a memory device with bit lines, word lines, and dummy word lines.

26. Macronix's U.S. Patent No. 8,035,417 describes an output buffer circuit with variable drive strength for semiconductor devices, such as flash memory.

### **IV. THE ASSERTED PATENTS AND NON-TECHNICAL DESCRIPTIONS**

#### **A. U.S. Patent No. 6,552,360**

##### **1. Identification and Ownership of the '360 Patent**

27. United States Patent No. 6,552,360, titled "Method and Circuit Layout for Reducing Post Chemical-Mechanical Polishing Defect Count," issued on April 22, 2003, to inventors Chun-Lien Su, Chi-Yuan Chin, Ming-Shang Chen, Tsung-Hsien Wu, and Yih-Shi Lin.



See Ex. 1. The '360 Patent issued from Application No. 10/054,985, filed on January 25, 2002.

*Id.*

28. The '360 Patent has 1 independent claim and 8 dependent claims. *Id.* The claims of the '360 Patent are valid, enforceable, and currently in full force and effect.

29. Macronix International Co., Ltd. owns by assignment the entire right, title, and interest in and to the '360 Patent. See Ex. 4 (Certified Copy of Recorded Assignment for U.S. Patent No. 6,552,360).

30. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by four copies of the prosecution history of the '360 Patent. See App. A. A certified copy of the prosecution history of the '360 Patent has been ordered and will be submitted upon receipt. Further, pursuant to Commission Rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the '360 Patent. See App. D.

## **2. Non-technical Description of the '360 Patent<sup>3</sup>**

31. The '360 Patent is generally directed to a circuit layout on a substrate of a semiconductor wafer suitable to be used with a CMP process. Ex. 1 ('360 Patent) at 1:9-10. For example, FIG. 4 of the '360 Patent shows a circuit layout of a plurality of strips of a first circuit structure (e.g., 130a) and at least two strips of a second circuit structure (e.g., 130b) where each of the two strips of the second circuit structure link the front end and the rear end of the strips of the first circuit structure. *Id.* at 2:26-30.

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<sup>3</sup> All non-technical descriptions of the patents herein are presented to give a general background of those inventions. Such statements are not intended to be used, nor should be used, for purposes of patent claim interpretation. Complainants present these statements subject to, and without waiver of, their right to argue that claim terms should be construed in a particular way, as contemplated by claim interpretation jurisprudence and the relevant evidence.

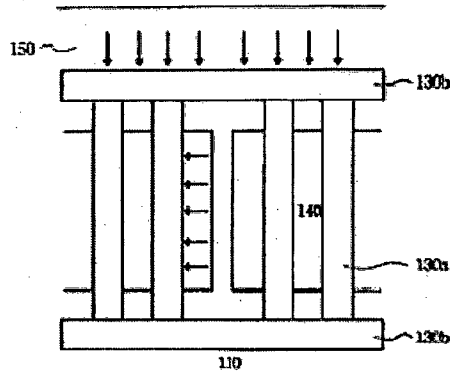


FIG. 4

32. Such a layout can improve structure strength of the circuit to reduce the possibility of generating defects during the CMP process, thereby promoting yield and throughput. *Id.* at 2:10-13. For example, the polishing pressure on the front and rear ends on the first circuit structure 130a may be more uniform because of the presence of the second circuit structure 130b. *Id.* at 4:59-62. As a result, the possibility of generating defects in the CMP process may decrease. *Id.* at 4:63-65.

### 3. Foreign Counterparts

33. The foreign patents and patent applications corresponding to the '360 Patent are:

- Taiwanese Patent No. TW531800B, issued on May 11, 2003, and
- Chinese Patent No. CN1228846C, issued on November 23, 2005.

34. No other foreign applications or patents corresponding to the '360 Patent have been filed, abandoned, or rejected.

### 4. Licenses

35. As required under Commission Rule 210.12(a)(9)(iii), a list of licensed entities is attached to this Complaint. *See* Ex. 26C. There are no other current licenses involving the '360 patent.

**B. U.S. Patent No. 6,788,602**

**1. Identification and Ownership of the '602 Patent**

36. United States Patent No. 6,788,602, titled "Memory Device and Operation Thereof," issued on September 7, 2004 to inventors Jen-Ren Huang, Ming-Hung Chou, and Hsin-Chien Chen. *See* Ex. 2. The '602 Patent issued from Application No. 10/214,770, which was filed on Aug. 9, 2002. *Id.*

37. The '602 Patent has 3 independent claims and 14 dependent claims. *Id.* The claims of the '602 Patent are valid, enforceable, and currently in full force and effect.

38. Macronix International Co., Ltd. owns by assignment the entire right, title, and interest in and to the '602 Patent. *See* Ex. 5 (Certified Copy of Recorded Assignment for U.S. Patent No. 6,788,602).

39. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by four copies of the prosecution history of the '602 Patent. *See* App. B. A certified copy of the prosecution history of the '602 Patent has been ordered and will be submitted upon receipt. Further, pursuant to Commission Rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the '602 Patent. *See* App. E.

**2. Non-technical Description of the '602 Patent<sup>4</sup>**

40. The '602 Patent is generally directed to a semiconductor memory device and method for preventing dummy cells coupled to dummy word lines from over-erasing. Ex. 2

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<sup>4</sup> All non-technical descriptions of the patents herein are presented to give a general background of those inventions. Such statements are not intended to be used, nor should be used, for purposes of patent claim interpretation. Complainants present these statements subject to, and without waiver of, their right to argue that claim terms should be construed in a particular way, as contemplated by claim interpretation jurisprudence and the relevant evidence.

'602 Patent) at 1:7-10. To protect a usable memory cell from damage, the memory device may include, at an edge, a word line that is not used for programming or storing data, i.e. a “dummy word line.” *See id.* at 1:23-28. This dummy word line and the corresponding “dummy cell” are in a constant state of being erased. *Id.* at 1:32-33. This over-erasure could result in current leakage along the bit lines coupled to the over-erased dummy cells during read operations of usable memory cells. *Id.* at 1:34-36. The '602 Patent is generally directed to a device to prevent such over-erasure by coupling the dummy word line to a positive bias.

### **3. Foreign Counterparts**

41. The foreign patents and patent applications corresponding to the '602 Patent are:

- Chinese Patent No. CN1474455B, issued on December 26, 2012; and
- Taiwanese Patent No. TW594741B, issued on June 21, 2004.

42. No other foreign applications or patents corresponding to the '602 Patent have been filed, abandoned, or rejected.

### **4. Licenses**

43. As required under Commission Rule 210.12(a)(9)(iii), a list of licensed entities is attached to this Complaint. *See Ex. 26C.* There are no other current licenses involving the '602 patent.

## **C. U.S. Patent No. 8,035,417**

### **1. Identification and Ownership of the '417 Patent**

44. United States Patent No. 8,035,417, titled “Output Buffer Circuit with Variable Drive Strength,” issued on October 11, 2011 to inventors Chun-Hsiung Hung and Chun-Yi Lee. *See Ex. 3.* The '417 Patent issued from Application No. 12/843,452, filed on July 26, 2010. *Id.*

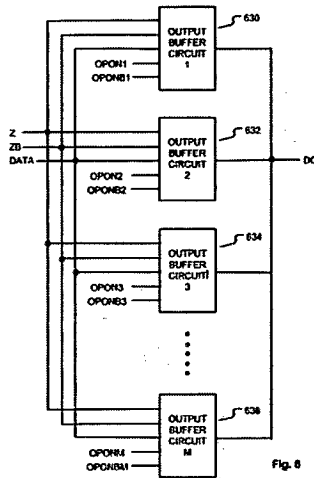
45. The '417 Patent has 3 independent claims and 15 dependent claims. *Id.* The claims of the '417 Patent are valid, enforceable, and currently in full force and effect.

46. Macronix International Co., Ltd. owns by assignment the entire right, title, and interest in and to the '417 Patent. *See* Ex. 6 (Certified Copy of Recorded Assignment for U.S. Patent No. 8,035,417).

47. Pursuant to Commission Rule 210.12(c)(1), this Complaint is accompanied by four copies of the prosecution history of the '417 Patent. *See* App. C. A certified copy of the prosecution history of the '417 Patent has been ordered and will be submitted upon receipt. Further, pursuant to Commission Rule 210.12(c)(2), this Complaint is accompanied by four copies of each technical reference identified in the prosecution history of the '417 Patent. *See* App. F.

## **2. Non-technical Description of the '417 Patent**

48. A trend in modern power supply design is to provide an output buffer circuit for each electrical load that has been customized to satisfy the specific voltage, speed and other requirements of that load. *See* Ex. 3 ('417 Patent) at 1:11-15. This complicates design. *Id.* To address this problem, the '417 Patent discloses an output buffer circuit that can be set to have an appropriate drive strength depending on its purpose, the supply voltage, and the electrical characteristics of the electrical load. *See id.* at Abstract.



49. In particular, such variable output buffer circuits may be arranged in parallel, as shown for example in exemplary FIG. 6 of the '417 Patent. The combined output of the plurality of buffer circuits, labelled DQ in Figure 6, has a combined output drive strength that varies with the values of the control input signals that enable or disable each individual buffer circuit. *Id.* at 8:49-53. Accordingly, the output of the buffer circuit has suitable drive characteristics to fit the requirements of the electrical load. *Id.* at 8:53-55.

### 3. Foreign Counterparts

50. There are no foreign applications or patents corresponding to the '417 Patent.

### 4. Licenses

51. As required under Commission Rule 210.12(a)(9)(iii), a list of licensed entities is attached to this Complaint. *See* Ex. 26C. There are no other current licenses involving the '417 Patent.

## V. SPECIFIC INSTANCES OF UNFAIR IMPORTATION AND SALE

52. On information and belief, Toshiba, itself and/or through subcontractors, manufactures, assembles, packages, and tests the Accused NVM at foreign facilities. Toshiba

then sells for importation into the United States, imports, and/or sells within the United States after importation such Accused NVM and products containing same.

53. As shown on the TAEC's website, many models of Accused NVM devices are available for purchase in the United States. *See* Ex. 15 (Toshiba Semiconductor & Storage Products: Sales Contacts in California). For example, Accused NVM devices and products containing same are available for purchase in the United States from at least Digi-Key Corporation, Advance Modular Technology Inc., and Vyrian Inc. in the United States. *See id.*; Ex. 18 (Purchase Receipts and Photographs of Accused Products).

54. Samples of certain of the Accused Products, including Toshiba's TC58NVG1S3HTA00 and TC58NVG3S0FTA00 were purchased in the United States from Digi-Key Corporation. Samples of another Accused Product, Toshiba's TH58TEG7DCJTA20, were purchased from Advance Modular Technology Inc. in the United States. Further, samples of other Accused Products, including Toshiba's TC58TEG6DDKTA00, and TH58TEG8DDKTA20, were purchased from Vyrian Inc. A copy of the purchase receipt and photographs of the samples of the accused NVM devices are attached to the Complaint. *See* Ex. 18.

55. Toshiba's TC58NVG1S3HTA00, TC58NVG3S0FTA00, TH58TEG8DDKTA20, and TH58TEG7DCJTA20 are each marked "Taiwan" on their face. *See* Ex. 18. Toshiba's TC58TEG6DDKTA00 is marked "China" on its face. *See id.* On information and belief, the "Taiwan" and "China" designation indicates that these Toshiba Accused Products are each packaged and/or assembled, and subsequently marked, in Taiwan and/or China (*see* Ex. 18), and the Accused NVM and products containing same have therefore been imported into the United States, and will likely continue to be imported into the United States.

56. On information and belief, the Accused NVM models purchased in the United States and those analyzed for infringement are representative of a large number of different Accused NVM models sold in the United States. In the non-volatile memory industry, designers and manufacturers such as Toshiba invest large research budgets and years of time to develop next generation architectures and fabrication process platforms. Those architecture and process platforms are the building blocks that are used to produce families of many different models of commercial non-volatile memory devices. These models incorporate the same architecture and/or are fabricated by the same process, but differ by memory capacity, voltage, speed, packaging, or other implementation details. This industry standard practice of developing an architecture and process platform for generating families of many different models of non-volatile memory devices is necessary for cost-effective operation in this competitive industry. On information and belief, the Asserted Patents are directed to features of Accused NVM architecture and process platforms that are common to many models of Accused NVM. As Toshiba does not appear to publicly identify its products that incorporate the features and fabrication processes at issue, discovery will be necessary to confirm the entire range of Accused NVM that are infringing and products containing same.

57. Additionally, upon information and belief, the Toshiba Respondents sell Accused NVM to third parties for assembly into downstream products, including but not limited to memory cards, solid-state drives, wearable products, digital camcorders, mobile devices, advanced audiovisual systems, car navigation systems, computers, servers, and other consumer electronics. Such products are sold for importation into the United States, imported, and/or sold within the United States after importation, and on information and belief, the Toshiba Respondents are aware of such activities.



58. It is not practical for Macronix to identify all devices and products sold for importation into the United States, imported, and/or sold within the United States after importation that contain Accused NVM. Toshiba continues to market its infringing non-volatile memory devices and products containing same worldwide via the Internet to prospective importers of infringing downstream products. *See, e.g.*, Ex. 16. Macronix reserves its right to supplement its allegations, to amend the Complaint, and to add respondents in the future.

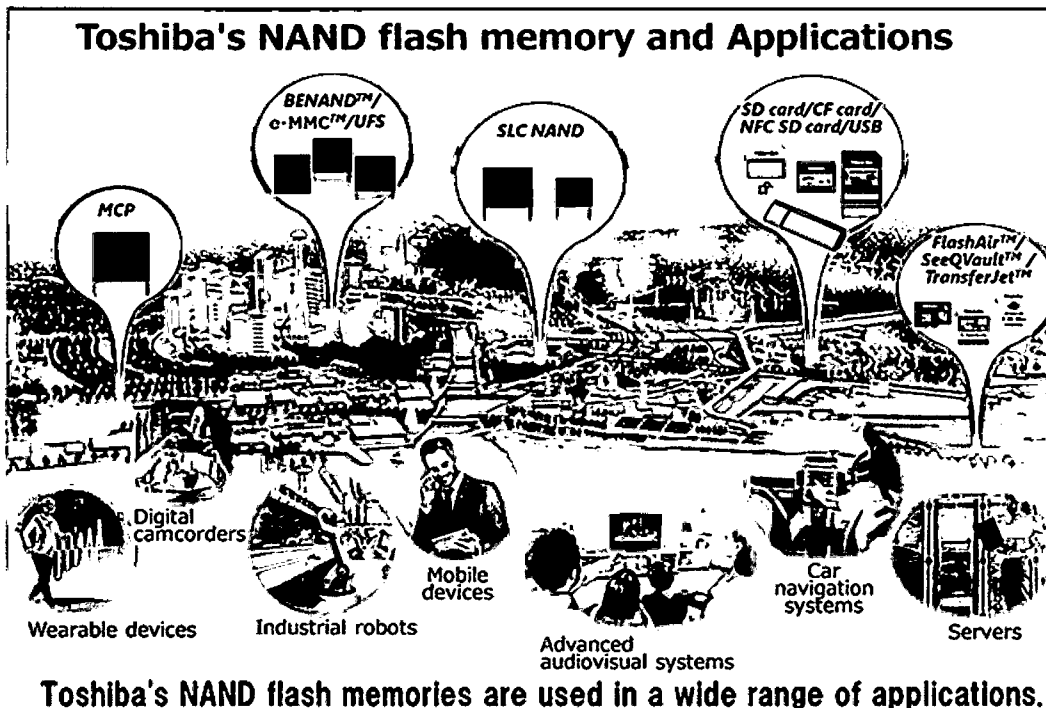
#### **VI. TOSHIBA'S KNOWLEDGE OF THE PATENTS-IN-SUIT**

59. Macronix and Toshiba had engaged in a series of discussions relating to Toshiba's infringement of Macronix's patents. Macronix also gave notice regarding Toshiba's infringement of the '360 Patent on or about April 2, 2015. Macronix gave notice regarding Toshiba's infringement of the '602 Patent and the '417 Patent on or about January 14, 2016.

#### **VII. UNLAWFUL AND UNFAIR ACTS OF RESPONDENTS – PATENT INFRINGEMENT**

60. The Proposed Respondents have engaged in unfair trade practices, including the sale for importation, importation, and sale after importation of certain non-volatile memory devices and products containing same that infringe the Asserted Claims of the Asserted Patents. These activities by Respondents constitute a violation of Section 337.

61. Toshiba is aware that its customers and end-users are using the Accused Products in an infringing manner. For example, Toshiba's website states that NAND flash memory is suitable for storing large amounts of data, referring to "Fast write and erase rates." Further, Toshiba's website promotes the use of the Accused Products "in a wide range of applications":



See Ex. 21.

62. Further, Toshiba provides its customers with extensive datasheets, application notes, white papers, and other technical support describing the operation and specifications of the Accused NVMs and/or Accused Products. See, e.g., Ex. 19, Ex. 20. For example, Toshiba's product catalogue expressly states that, before customers use the Accused Products, "customers must also refer and comply" with Toshiba's product documentation:

Before customers use the Product, create designs including the Product, or incorporate the Product into their own applications, customers must also refer to and comply with (a) the latest versions of all relevant TOSHIBA information, including without limitation, this document, the specifications, the data sheets and application notes for Product and the precautions and conditions set forth in the "TOSHIBA Semiconductor Reliability Handbook" and (b) the instructions for the application with which the Product will be used with or for. Customers are solely responsible for all aspects of their own product design or applications, including but not limited to (a) determining the appropriateness of the use of this Product in such design or applications; (b) evaluating and determining the applicability of any information contained in this document, or in charts, diagrams, programs, algorithms, sample application circuits, or any other referenced documents; and (c) validating all operating parameters for such designs and applications.

*See* Ex. 17 at p. 20. The information and instructions provided by Toshiba through customer-facing documents induce its customers to directly infringe the Patents-in-Suit.

**A. Infringement of the '360 Patent**

63. The Accused Products that are sold for importation, imported, and/or sold after importation by the Toshiba Respondents infringe claims 1, 2, 3, 4, 5, 6, 7, and 8 of the '360 Patent, either literally or under the doctrine of equivalents. For example, a chart that applies representative independent claim 1 of the '360 Patent to the Accused Products is attached to this Complaint. *See* Ex. 22C.

64. At present, Macronix has identified the Toshiba Respondents as respondents that have violated Section 337 by directly and/or indirectly infringing one or more asserted claims of the '360 Patent. However, because it is difficult to identify all sources of Accused NVM, and discovery may reveal that additional downstream respondents have also violated Section 337 with respect to the '360 Patent, Macronix reserves all rights to supplement its allegations to identify additional respondents that have violated Section 337 with respect to the '360 Patent.

65. Toshiba induces infringement of the asserted claims of the '360 Patent because it had knowledge of the '360 Patent and the Accused Products' infringement thereof since at least April 2, 2015, when Macronix notified Toshiba about this patent as part of licensing discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused Products with the intent and knowledge that its customers will use the Accused Products in an infringing manner constitute inducing infringement. As set forth in Exhibit 22C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '360 Patent. By providing the Accused Products to its customers and

instructions to use the Accused Products in an infringing manner while being on notice of the '360 Patent and Macronix's infringement theories, Toshiba has demonstrated specific intent that its customers infringe the '360 Patent.

66. Toshiba contributorily infringes the asserted claims of the '360 patent because it had knowledge of the '360 Patent and the Accused Products' infringement thereof since at least April 2, 2015, when Macronix notified Toshiba about this patent as part of licensing discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused Products that embody a material part of the claimed invention of the '360 Patent, that are known by Toshiba to be specially made or adapted for use in an infringing manner, and that are not staple articles with substantial non-infringing uses constitutes contributory infringement. As set forth in Exhibit 22C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '360 Patent. Toshiba has knowledge of that direct infringement. The Accused Products devices are specially designed to infringe the asserted claims of the '360 Patent and have no substantial non-infringing uses.

**B. Infringement of the '602 Patent**

67. The Accused Products that are sold for importation, imported, and/or sold after importation by the Toshiba Respondents infringe claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 16 of the '602 Patent, either literally or under the doctrine of equivalents. For example, a chart that applies asserted independent claims 1, 7 and 11 of the '602 Patent to the Accused Products is attached to this Complaint. *See Ex. 23C.*

68. At present, Macronix has identified the Toshiba Respondents as respondents that have violated Section 337 by directly and/or indirectly infringing one or more asserted claims of the '602 Patent. However, because it is difficult to identify all sources of Accused NVM, and discovery may reveal that additional downstream respondents have also violated Section 337 with respect to the '602 Patent, Macronix reserves all rights to supplement its allegations to identify additional respondents that have violated Section 337 with respect to the '602 Patent.

69. Toshiba induces infringement of the asserted claims of the '602 Patent because it had knowledge of the '602 Patent and the Accused Products' infringement thereof since at least January 14, 2016, when Macronix notified Toshiba about this patent as part of licensing discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused Products with the intent and knowledge that its customers will use the Accused Products in an infringing manner constitute inducing infringement. As set forth in Exhibit 23C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '602 Patent. By providing the Accused Products to its customers and instructions to use the Accused Products in an infringing manner while being on notice of the '602 Patent and Macronix's infringement theories, Toshiba has demonstrated specific intent that its customers infringe the '602 Patent.

70. Toshiba contributorily infringes the asserted claims of the '602 Patent because it had knowledge of the '602 Patent and the Accused Products' infringement thereof since at least January 14, 2016, when Macronix notified Toshiba about this patent as part of licensing discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused

Products that embody a material part of the claimed invention of the '602 Patent, that are known by Toshiba to be specially made or adapted for use in an infringing manner, and that are not staple articles with substantial non-infringing uses constitutes contributory infringement. As set forth in Exhibit 23C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '602 Patent. Toshiba has knowledge of that direct infringement. The Accused Products devices are specially designed to infringe the asserted claims of the '602 Patent and have no substantial non-infringing uses.

**C. Infringement of the '417 Patent**

71. The Accused Products that are sold for importation, imported, and/or sold after importation by the Toshiba Respondents infringe claims 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 16, and 18 of the '417 Patent, either literally or under the doctrine of equivalents. For example, a chart that applies asserted independent claims 1, 11, and 18 of the '417 Patent to the Accused Products is attached to this Complaint. *See Ex. 24C.*

72. At present, Macronix has identified the Toshiba Respondents as respondents that have violated Section 337 by directly and/or indirectly infringing one or more asserted claims of the '417 Patent. However, because it is difficult to identify all sources of Accused NVM, and discovery may reveal that additional downstream respondents have also violated Section 337 with respect to the '417 Patent, Macronix reserves all rights to supplement its allegations to identify additional respondents that have violated Section 337 with respect to the '417 Patent.

73. Toshiba induces infringement of the asserted claims of the '417 Patent because it had knowledge of the '417 Patent and the Accused Products' infringement thereof since at least January 14, 2016, when Macronix notified Toshiba about this patent as part of licensing

discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused Products with the intent and knowledge that its customers will use the Accused Products in an infringing manner constitute inducing infringement. As set forth in Exhibit 24C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '417 Patent. By providing the Accused Products to its customers and instructions to use the Accused Products in an infringing manner while being on notice of the '417 Patent and Macronix's infringement theories, Toshiba has demonstrated specific intent that its customers infringe the '417 Patent.

74. Toshiba contributorily infringes the asserted claims of the '417 Patent because it had knowledge of the '417 Patent and the Accused Products' infringement thereof since at least January 14, 2016, when Macronix notified Toshiba about this patent as part of licensing discussions. Toshiba's participation in these licensing discussions about this patent, and Toshiba's continued sale, offer for sale, importation, and/or sale for importation of Accused Products that embody a material part of the claimed invention of the '417 Patent, that are known by Toshiba to be specially made or adapted for use in an infringing manner, and that are not staple articles with substantial non-infringing uses constitutes contributory infringement. As set forth in Exhibit 24C, when the Toshiba Respondents' customers use the Accused Products in their intended manner, these customers directly infringe the asserted claims of the '417 Patent. Toshiba has knowledge of that direct infringement. The Accused Products devices are specially designed to infringe the asserted claims of the '417 Patent and have no substantial non-infringing uses.

## **VIII. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS**

75. The Accused Products are believed to fall within, at least, Heading Nos. 8523.51.00 (Discs, tapes, solid-state non-volatile storage devices, “smart cards” and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs: Semiconductor media – solid-state non-volatile storage devices); 8517.62.00 (Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus: Modems); 8525.80.40 (Digital still image video cameras); 8527.29.40 (Radiobroadcast receivers not capable of operating without an external source of power, of a kind used in motor vehicles: FM only or AM/FM only); 8517.62.00 (Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus: Other); 8542.31.00 (Processors and controllers, whether or not combined with memories, converters, logic circuits, amplifiers, clock and timing circuits, or other circuits); and 8542.32.00 (Memories). These HTS numbers are intended for illustration only and are not intended to be restrictive of the devices or products accused.

## **IX. RELATED LITIGATION**

76. Macronix asserted the '360 Patent against Spansion Inc., Spansion LLC and other respondents on December 27, 2013 by filing a complaint in the U.S. International Trade Commission, that the Commission instituted as Investigation No. 337-TA-909. This matter settled after a hearing on the merits, but prior to the issuance of an Initial Determination. Spansion petitioned the Patent Trial and Appeal Board (“PTAB”) of the United States Patent and Trademark Office to request an Inter Parties Review (“IPR”) of the '360 Patent on July 21, 2014. The PTAB denied institution of the IPR on December 22, 2014.



77. The '602 and '417 Patents have not been the subject of any court or agency litigation.

78. Macronix, contemporaneously with or shortly after the filing of the instant Complaint with the United States International Trade Commission, is filing a complaint against Respondents in the U.S. District Court for the Southern District of California, alleging infringement of one or more claims of the Asserted Patents.

## **X. DOMESTIC INDUSTRY**

### **A. Technical Prong**

79. Claim charts showing how exemplary Macronix products practices an exemplary independent claim of the '360 Patent, thereby providing the basis for the domestic industry relating to the asserted claims of the '360 Patent, are attached hereto as Exhibit 34C and Exhibit 35C.

80. Claim charts showing how exemplary Macronix products practices an exemplary independent claim of the '602 Patent, thereby providing the basis for the domestic industry relating to the asserted claims of the '602 Patent, are attached hereto as Exhibit 36C and Exhibit 37C.

81. Claim charts showing how exemplary Macronix products practices an exemplary independent claim of the '417 Patent, thereby providing the basis for the domestic industry relating to the asserted claims of the '417 Patent, are attached hereto as Exhibit 38C and Exhibit 39C.

### **B. Economic Prong**

82. A domestic industry in the United States exists under 19 U.S.C. § 1337(a)(2) and (3) due to Macronix's own significant investment in the United States in: (i) plant and equipment

per 19 U.S.C. § 1337(a)(3)(A); (ii) significant employment of labor and capital per 19 U.S.C. § 1337(a)(3)(B); and (iii) substantial investment in the exploitation of the Asserted Patents through engineering and technical support for products covered by those patents per 19 U.S.C. § 1337(a)(3)(C). In addition, a domestic industry in the United States also exists under 19 U.S.C. § 1337(a)(2) and (3) due to Macronix's licensee's significant investment in: (i) plant and equipment per 19 U.S.C. § 1337(a)(3)(A); (ii) labor and capital per 19 U.S.C. § 1337(a)(3)(B); and/or (iii) substantial investment in the exploitation of the Asserted Patents, including engineering and research and development with respect to articles protected by those patents per 19 U.S.C. § 1337(a)(3)(C).

83. In addition to these existing domestic industries in the Asserted Patents, a domestic industry in new technologies that practice the Asserted Patents in the United States is also in the process of being established under 19 U.S.C. § 1337(a)(2) and (3). Macronix and others have taken significant, tangible steps towards the establishment of this new domestic industry, including significant investments in: (i) plant and equipment per 19 U.S.C. § 1337(a)(3)(A); (ii) labor and capital per 19 U.S.C. § 1337(a)(3)(B); and/or (iii) substantial investment in the exploitation of the Asserted Patents, including engineering and research and development with respect to articles protected by those patents per 19 U.S.C. § 1337(a)(3)(C). As a result of these steps, there is a significant likelihood that this new domestic industry will be established in the future.

**1. Existing Domestic Industry, as Evidenced by Macronix's Engineering Investments**

84. A domestic industry exists in the United States based on Macronix's significant investment in plant and equipment, significant employment of labor and capital, and substantial

investment in the exploitation of the Asserted Patents through engineering and technical support for products covered by those patents. *See* Ex. 25C (Domestic Industry Data).

**2. Existing Domestic Industry, as Evidenced by Macronix's Joint Research Activity with Confidential Licensee**

85. Because the identity of Macronix's licensee identified in Exhibit 28C is confidential, Macronix presents the facts related to its joint research activity in confidential Exhibit 32C (Joint Research Activity between Macronix and Confidential Licensee No. 2).

**3. Emergent Domestic Industry, as Evidenced by Macronix's Joint Research Activity with Confidential Licensee**

86. In addition to the existing domestic industry discussed in paragraph 85 of this Complaint, a domestic industry in new technologies that practice the Asserted Patents in the United States is also in the process of being established under 19 U.S.C. § 1337(a)(2) and (3). Macronix and its confidential licensee have taken significant, tangible steps towards the establishment of this new domestic industry. As a result of those steps, there is a significant likelihood that this industry will emerge in the future. Because the identity of Macronix's licensee identified in Exhibit 28C is confidential, Macronix presents the facts related to the emergent domestic joint research activity in confidential Exhibit 32C (Joint Research Activity by Macronix and Confidential Licensee No. 2).

**XI. REQUESTED EXCLUSION ORDERS**

**A. Limited Exclusion Order**

87. Pursuant to Section 337(d), Macronix respectfully requests that a limited exclusion order be entered against each named Respondent and its subsidiaries and affiliates in order to remedy the Respondents' violation of Section 337 and to prevent such future violations by Respondents.

**B. Cease and Desist Order**

88. Cease and desist orders against all named Respondents are appropriate under Section 337(f), which provides that the Commission may issue a cease and desist order against any person violating Section 337 in addition to exclusion orders issued under Section 337(d). On information and belief, the Toshiba Respondents maintain commercially significant domestic inventory of Accused NVM and/or products containing same. Moreover, where, as here, the infringing devices are easily concealed, and it is difficult to identify the source of infringing products, a cease and desist order is necessary to ensure compliance with the requested exclusion orders. At least for the foregoing reasons, cease and desist orders are appropriate to remedy, and prevent, the widespread violation of Macronix's patent rights.

**XII. RELIEF REQUESTED**

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

- (a) Institute an immediate investigation, pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337(a)(1)(B)(i) and (b)(1), with respect to violation of Section 337 by Respondents based upon their sale for importation, importation, and/or sale after importation into the United States of certain devices containing NVM and products containing the same that infringe one or more of the Asserted Claims of Macronix's United States Patent Nos. 6,552,360; 6,788,602; and 8,035,417;
- (b) Schedule and conduct a hearing on said unlawful acts and, following said hearing:

- (c) Issue a permanent limited exclusion order, pursuant to 19 U.S.C. § 1337(d), specifically directed to each named Respondent and each of their respective subsidiaries and affiliates, barring from entry into the United States all Accused Products, that infringe one or more of the Asserted Claims of Macronix's United States Patent Nos. 6,552,360; 6,788,602; and 8,035,417;
- (d) Issue a permanent cease and desist order, pursuant to 19 U.S.C. § 1337(f), directing Respondents to cease and desist from selling for importation into the United States, importing, selling after importation into the United States, offering for sale, marketing, advertising, demonstrating, sampling, warehousing inventory for distribution, selling, distributing, licensing, testing, providing technical support, use, or other related commercial activity involving imported Accused Products that infringe one or more of the Asserted Claims of Macronix's United States Patent Nos. 6,552,360; 6,788,602; and 8,035,417; and
- (e) Impose a bond, under to Section 337(j) of the Tariff Act of 1930, as amended, upon the Respondents during the Presidential review period; and
- (f) Grant such other and further relief as the Commission deems just and proper based on the facts determined by the investigation and the authority of the Commission.

Respectfully submitted,

FISH & RICHARDSON P.C.

Dated: March 7, 2017

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