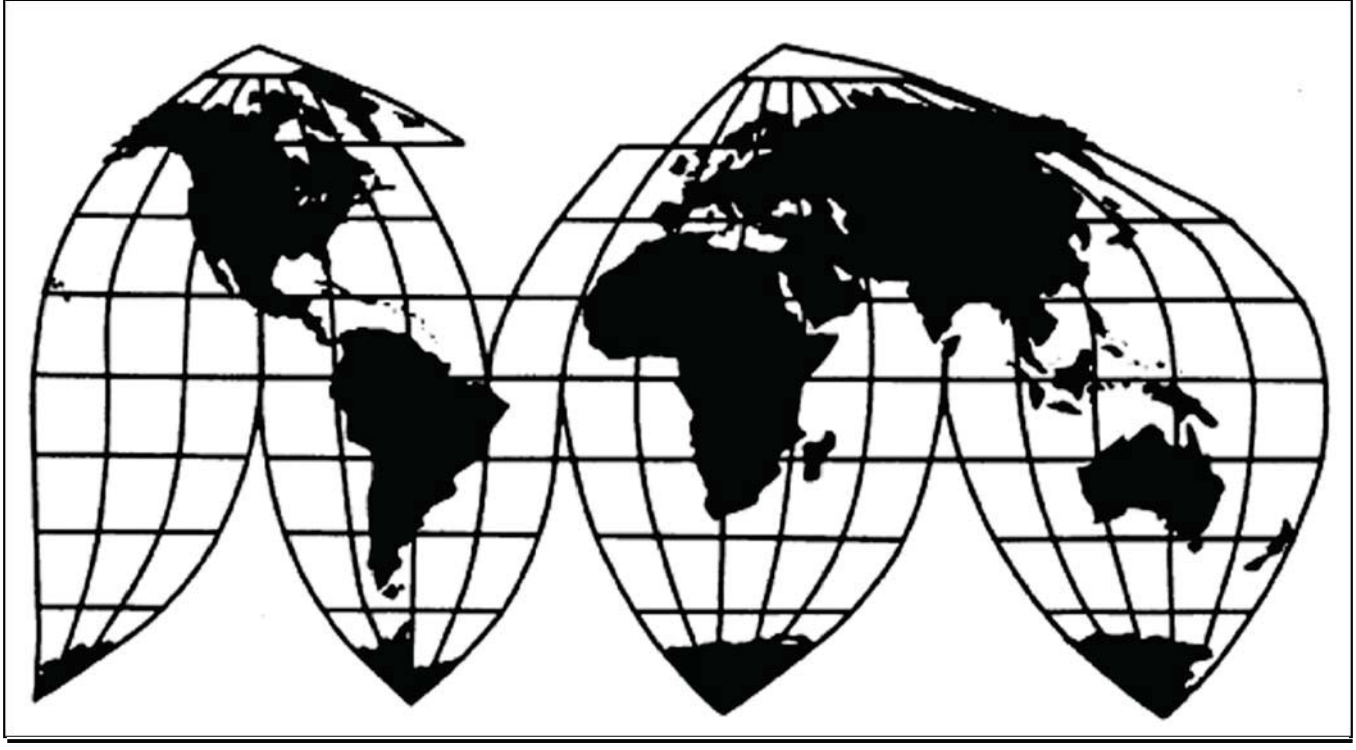
In the Matter of

Certain Flash Memory Chips and Products Containing Same

Investigation No. 337-TA-664

Publication 4267 **October 2011**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

COMMISSIONERS

Deanna Tanner Okun, Chairman
Irving A. Williamson, Vice Chairman
Charlotte R. Lane
Daniel R. Pearson
Shara L. Aranoff
Dean A. Pinkert

Address all communications to
Secretary to the Commission
United States International Trade Commission
Washington, DC 20436

U.S. International Trade Commission

Washington, DC 20436
www.usitc.gov

In the Matter of

Certain Flash Memory Chips and Products Containing Same

Investigation No. 337-TA-664

Publication 4267

October 2011

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING SAME**	**Investigation No. 337-TA-664**

NOTICE OF COMMISSION DECISION NOT TO REVIEW THE ALJ's FINAL INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337; TERMINATION OF INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined not to review the presiding administrative law judge's ("ALJ") final initial determination ("ID") issued on October 22, 2010, finding no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, in this investigation.

FOR FURTHER INFORMATION CONTACT: Panyin A. Hughes, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3042. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on December 18, 2008, based on a complaint filed by Spansion, Inc. and Spansion LLC both of Sunnyvale, California (collectively, "Spansion"). 73 *Fed. Reg.* 77059-061 (Dec. 18, 2008). The complaint alleged violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain flash memory chips and products containing the same by reason of infringement of various claims of United States Patent Nos. 6,380,029 ("the '029 patent");

6,080,639 ("the '639 patent"); 6,376,877 ("the '877 patent"); and 5,715,194 ("the '194 patent"). The '029 patent and the '639 patent were subsequently terminated from the investigation. The complaint named over thirty respondents. On March 12, 2010, the complaint and notice of investigation were amended to terminate several respondents from the investigation and to add certain entities as respondents. 75 *Fed. Reg.* 11909-910 (Mar. 12, 2010).

On October 22, 2010, the ALJ issued his final ID, finding no violation of section 337 by Respondents with respect to any of the asserted claims of the two remaining patents. Specifically, the ALJ found that the accused products do not infringe the asserted claims of the '877 patent. The ALJ also found that none of the cited references anticipated the asserted claims and that none of the cited references rendered the asserted claims of the '877 patent obvious. The ALJ further found that an industry in the United States that practices or exploits the '877 patent does not exist, nor is such an industry in the process of being established, and concluded that Spansion failed to satisfy the domestic industry requirement of section 337 (19 U.S.C. § 1337(a)(2) and (3)). With respect to the '194 patent, the ALJ found that certain accused products do not infringe its asserted claims. The ALJ, however, found that other accused products met all the limitations of the asserted claims but found that a prior art reference, United States Patent No. 5,621,684 to Jung, anticipated the asserted claims and rendered them invalid. The ALJ also found that the asserted claims were not obvious in light of the references respondents relied upon to prove obviousness. The ALJ further found that an industry in the United States that practices or exploits the '194 patent does not exist, nor is such an industry in the process of being established, and concluded that Spansion failed to satisfy the domestic industry requirement of section 337.

On November 8, 2010, the Commission investigative attorney ("IA") filed a petition for review of the ID, seeking review of the ALJ's determination that Spansion failed to satisfy the domestic industry requirement by relying on licensing efforts that occurred after the complaint was filed. The next day, Respondents filed a joint contingent petition for review, asking the Commission to review certain findings in the ID in the event that the Commission decides to review the ID. Spansion did not petition the Commission for review of any findings in the ID. On November 16, 2010, Spansion filed a combined response to the IA's petition for review and Respondents' joint contingent petition for review. Also on November 16, 2010, Respondents filed a joint response to the IA's petition for review.

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined not to review the subject ID.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in section 210.42(h) of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.42(h)).

By order of the Commission.

Marilyn R. Abbott
Secretary to the Commission

Issued: December 23, 2010

CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING THE SAME **337-TA-664**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION DECISION NOT TO REVIEW THE ALJ'S FINAL INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337; TERMINATION OF INVESTIGATION** has been served by hand upon the Commission Investigative Attorney, Bryan F. Moore, Esq., and the following parties as indicated, on December 23, 2010.

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainants Spansion Inc. and Spansion LLC:

Gilbert B. Kaplan, Esq.
KING & SPALDING LLP
1700 Pennsylvania Avenue, NW
Washington, DC 20006

( ) Via Hand Delivery
( ) Via Overnight Mail
(X) Via First Class Mail
( ) Other: _____

On Behalf of Respondents Samsung Electronics Co., Ltd.; Samsung Electronics America, Inc.; Samsung International, Inc.; Samsung Semiconductor, Inc.; Samsung Telecommunications America LLC.; PNY Technologies, Inc.; Apple Inc.; Asustek Computer, Inc.; Asus Computer International, Inc.; Transcend Information, Inc.; Transcend Information, Inc.; (US); Transcend Information, Inc. (Shanghai Factory); Kingston Technology Co., Inc.; Kingston Technology (Shanghai) Co., Ltd.; Kingston Technology Far East Co.; Lenovo (United States), Inc.; Lenovo Information Products (Shenzhen) Co., Ltd.; Sony Ericsson Mobile Communications AB; Sony Ericsson Mobile Communications (USA); Beijing SE Putian Mobile Communication Co., Ltd.; Hon Hai Precision Industry Co., Ltd.; Verbatim Americas LLC;

and, Verbatim:

D. Sean Trainor, Esq.
KIRKLAND & ELLIS LLP
655 Fifteenth Street, NW
Washington, DC 20005-5793

( ) Via Hand Delivery
( ) Via Overnight Mail
(X) Via First Class Mail
( ) Other: _____

On Behalf of Respondents Research In Motion Ltd. and Research In Motion Corporation:

V. James Adduci, II, Esq.
ADDUCI, MASTRIANI & SCHAUMBERG, LLP
1200 Seventeenth Street, NW - Fifth Floor
Washington, DC 20036

( ) Via Hand Delivery
( ) Via Overnight Mail
(X) Via First Class Mail
( ) Other: _____

On Behalf of Respondents Sony Corporation and Sony Corporation of America:

John M. Caracappa, Esq.
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue, NW
Washington, DC 20036

( ) Via Hand Delivery
( ) Via Overnight Mail
(X) Via First Class Mail
( ) Other: _____

Respondents:

Lenovo (Singapore) Pte. Ltd.
151 Lorong Chuan #02-01
New Tech Park
Singapore 556741

( ) Via Hand Delivery
( ) Via Overnight Mail
( ) Via First Class Mail
(X) INTERNATIONAL

Sony Electronics Inc.
16450 West Bernardo Drive
San Diego, CA 92127-1804

( ) Via Hand Delivery
( ) Via Overnight Mail
(X) Via First Class Mail
( ) Other: _____

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING THE SAME	**Inv. No. 337-TA-664**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Charles E. Bullock
(October 22, 2010)

Appearances:

For the Complainants Spansion, Inc. and Spansion LLC:

Ethan Horwitz, Esq.; Robert A. Whitman, Esq.; Andrea Pacelli, Esq.; and Anu Gokhale, Esq. of King & Spalding LLP from New York, NY

Gilbert B. Kaplan, Esq. and Jeffrey M. Telep, Esq. of King & Spalding LLP from Washington, DC

Jill Wasserman, Esq. and Thomas C. Lundin Jr., Esq. of King & Spalding LLP from Atlanta, GA

For the Respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung International, Inc., Samsung Semiconductor, Inc., Samsung Telecommunications America, LLC, Apple Inc., AsusTek Computer, Inc., Asus Computer International, Inc., Kingston Technology Co., Inc., Kingston Technology (Shanghai) Co. Ltd., Kingston Technology Far East Co., Lenovo (United States) Inc., Lenovo Information Products (Shenzhen) Co., Ltd., Lenovo (Singapore) Pte. Ltd., PNY Technologies, Inc., Sony Corporation, Sony Electronics Inc., Sony Ericsson Mobile Communications AB; Sony Ericsson Mobile Communications (USA); Beijing SE Potevio Mobile Communications Company, Ltd., Transcend Information, Inc., Transcend Information, Inc. (US), Transcend Information, Inc. (Shanghai Factory); Verbatim Americas LLC; Verbatim Corporation:

Gregory S. Arovas, Esq.; Todd M. Friedman, Esq.; and Alexis Gorton, Esq. of Kirkland & Ellis LLP from New York, NY

Edward C. Donovan, Esq. and D. Sean Trainor, Esq. of Kirkland & Ellis LLP from Washington, DC

Bao Nguyen, Esq. of Kirkland & Ellis LLP from San Francisco, CA

For Respondents Sony Corporation and Sony Corporation of America:

John M. Caracappa, Esq. of Steptoe and Johnson LLP from Washington, DC

For Respondents Research In Motion Ltd. and Research In Motion Corporation:

V. James Adduci, II, Esq.; Ian A. Taronji, Esq.; and Asha Allam, Esq. of Adduci, Mastriani & Schaumberg LLP from Washington, DC

Scott W. Breedlove, Esq. and Allen W. Yee, Esq. of Vinson & Elkins LLP from Dallas, TX

Steve R. Borgman, Esq. of Vinson & Elkins LLP from Houston, TX

For the Commission Investigative Staff:

Lynn I. Levine, Esq., Director; Anne Goalwin, Esq., Supervising Attorney; and Bryan F. Moore, Esq., Investigative Attorney of the Office of Unfair Import Investigations, U.S. International Trade Commission, from Washington, DC

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AIB	Respondent Apple, Inc.'s initial post-hearing brief
ARB	Respondent Apple, Inc.'s reply post-hearing brief
CDX	Complainants' demonstrative exhibit
CFF	Complainants' proposed findings of fact
CIB	Complainants' initial post-hearing brief
CRB	Complainants' reply post-hearing brief
CX	Complainants' exhibit
Dep.	Deposition
JX	Joint Exhibit
RDX	Respondents' demonstrative exhibit
RFF	Respondents' proposed findings of fact
RIB	Respondents' initial post-hearing brief
RRB	Respondents' reply post-hearing brief
RX	Respondents' exhibit
SFF	Staff's proposed findings of fact
SIB	Staff's initial post-hearing brief
SRB	Staff's reply post-hearing brief
Tr.	Transcript
Wit. Stat.	Witness Statement

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING THE SAME	**Inv. No. 337-TA-664**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Charles E. Bullock
(October 22, 2010)

Pursuant to the Notice of Investigation and Rule 210.42(a) of the Rules of Practice and Procedure of the United States International Trade Commission, this is the Administrative Law Judge's Initial Determination in the matter of certain Flash Memory Chips and Products Containing the Same, Investigation No. 337-TA-664.

The Administrative Law Judge hereby determines that no violation of Section 337 of the Tariff Act of 1930, as amended, has been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain flash memory devices and products containing the same, in connection with claims 1-3 and 5-8 of U.S. Patent No. 6,376,877 and claims 13, 15-18 and 20-22 of U.S. Patent No. 5,715,194. Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States does not exist that practices or exploits U.S. Patent Nos. 6,376,877 and 5,715,194.

DISCUSSION

I. Introduction

A. Procedural History

This investigation was instituted by the Commission on December 11, 2008, based on Complainants' allegations that certain of Respondents' flash memory chips and products containing the same infringe various claims of U.S. Patent Nos. 6,380,029 ("the '029 patent"), 6,080,639 ("the '639 patent"), 6,376,877 ("the '877 patent"), and 5,715,194 ("the '194 patent"). The Notice of Investigation was published in the Federal Register on December 18, 2008. 73 *Fed. Reg.* 77060 (December 18, 2008).

On December 19, 2008, Order No.2 issued setting the target date for this investigation as April 19, 2010. (*See* Order No. 2.) On February 9, 2009, Order No. 5 issued extending the target date to June 18, 2010, to accommodate a claim construction (*a.k.a.*, Markman) hearing. (*See* Order No.5.)

On March 12, 2009, Order No. 8 issued staying the investigation because the parties had reached a settlement of all claims. (*See* Order No. 8.) However, because Spansion was in bankruptcy, the settlement was conditioned on the bankruptcy court's approval. The bankruptcy court did not approve the settlement and on June 30, 2009, Order No. 9 issued resetting the procedural schedule and extending the target date for completion of this investigation to January 18, 2011. (*See* Order No. 9.)

In accordance with the revised procedural schedule, on November 9-10, 2009, a tutorial and claim construction hearing was held to determine the proper claim construction of the

asserted claims for all of the patents-in-suit. On February 12, 2010, the undersigned issued Order No. 34 construing the terms of the asserted claims of the patents-in-suit. (*See* Order No. 34.)

On January 28, 2010, Complainants moved to amend the Complaint and Notice of Investigation to add certain new Lenovo and Sony entities as Respondents and dismiss certain existing Lenovo, Sony, and Kingston Respondents from the investigation. On February 23, 2010, Order No. 35 issued as an initial determination granting the motion for leave to amend. (*See* Order No. 35.) The Commission has determined not to review that initial determination.

On March 15, 2010, Complainants moved to voluntarily terminate the investigation as to the '029 patent. On March 16, 2010, Order No. 43 issued as an initial determination terminating the '029 patent from this investigation. (*See* Order No. 43.) The Commission has determined not to review that initial determination.

On April 2, 2010, Complainants filed a motion seeking to voluntarily terminate the investigation as to the '639 patent. On April 7, 2010, Order No. 54 issued as an Initial Determination terminating the '639 patent from this investigation. (*See* Order No. 54.) The Commission has determined not to review that initial determination.

On September 29, 2009, Respondent Apple, Inc. filed a motion for leave to amend its response to the Complaint and Notice of Investigation. On April 21, 2010, Order No. 56 issued granting Apple's motion to amend. (*See* Order No. 56.)

On March 25, 2010, Complainants moved to amend the Amended Complaint to add [ ] licenses in support of its domestic industry: [ ] On April 23,2010, Order No 57 issue as

an initial determination granting Complainants' motion with regard to the [

] but not the [ ] (*See* Order No. 57.)

The Commission has determined not to review that initial determination.

An evidentiary hearing on liability was held before the undersigned from May 3-14, 2010.

On May 28, 2010, the parties filed initial post-hearing briefs, together with proposed findings of fact and conclusions of law.

On June 4, 2010, Respondents filed a motion for leave to file corrected joint initial post-hearing briefs. On June 21, 2010, Order No. 62 issued granting Respondents' motion.

One June 16, 2010, the parties filed reply post hearing briefs, together with objections and rebuttals to the findings of fact and conclusions of law.

On June 30, 2010, the Staff filed a motion for leave to file corrected initial and reply post-hearing briefs and findings, because the briefs "inadvertently contained references to versions of exhibits that were excluded from evidence." (Motion Docket No. 664-108) On July 23, 2010, Complainants and Respondents filed a joint motion for leave to file corrected post-hearing briefs, findings of fact, and rebuttals to the same, because the submissions inadvertently contained references to exhibits that had been withdrawn from evidence. (Motion Docket No. 664-110) In particular, Complainants and Respondents sought to file corrected version of the following documents: (1) Corrected Proposed Findings of Fact Of Complainants Spansion, Inc. and Spansion LLC; (2) Corrected Post-Trial Brief Of Complainants Spansion, Inc. and Spansion LLC; (3) Corrected Post-Trial Reply Brief Of Complainants Spansion, Inc. and Spansion LLC; (4) Respondents' Corrected Proposed Findings Of Fact; (5) Respondents' Third Corrected Joint

Initial Post-Hearing Brief; and (6) Respondents' Corrected Joint Objections and Rebuttals to Complainants' Corrected Proposed Findings of Fact.

The parties summarily assert that good cause exists to grant their motions to amend because the errors were inadvertent. However, the undersigned does not find the parties' excuse to constitute good cause. This investigation was no more complicated than any other 337 investigation. In fact, two of the four patents originally at issue in this investigation were withdrawn prior to the hearing, thereby significantly streamlining the issues in this investigation. It is not clear to the undersigned why the parties failed to properly cite check their post-hearing briefing. However, because mistakes were made uniformly by all the parties, the undersigned will, in the exercise of his discretion, grant Motion Docket Nos. 664-108 and 664-110.

On July 23, 2010, Respondents filed an unopposed motion for leave to file corrected joint final direct and rebuttal exhibit lists. (Motion Docket No. 664-109.) Good cause having been shown, Motion Docket No. 664-109 is hereby granted.

On September 3, 2010, Respondent Apple, Inc. filed an unopposed motion to reopen the record to admit certain proceedings and orders of the Bankruptcy Court. (Motion Docket No. 664-111) Good cause having been shown, Motion Docket No. 664-111 is hereby granted.

B. The Parties

1. Complainants

The Complainants are Spansion, Inc. and Spansion, LLC. (collectively, "Spansion"). Spansion, Inc. is a publicly traded holding company incorporated in the state of Delaware. (CX-10C (Button, Wit. Stat.) at Q&A 32.) Spansion LLC is a wholly owned operating subsidiary of

Spansion, Inc. and owner of the patents-in-suit. (*Id.*) Spansion has its United States headquarters in Sunnyvale, California, where it performs semiconductor manufacturing and R&D activities. (CX-7C (Eby, Wit. Stat.) at Q&A 15; CX-9C (Devost, Wit. Stat.) at Q&A 8.) Spansion is owner of the patents-in-suit.

On March 1, 2009, Spansion filed voluntary petitions in the United States Bankruptcy Court for the District of Delaware for reorganization relief under Chapter 11 of the United States Bankruptcy Code. (CX-10C (Button, Wit. Stat.) at Q&A 33; CX-1463C.) On May 10, 2010, Spansion emerged from Bankruptcy.

2. Respondents

The Respondents in this Investigation are Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung International, Inc., Samsung Semiconductor, Inc., and Samsung Telecommunications America, LLC (the "Samsung Respondents"); Apple, Inc. ("Apple"); AsusTek Computer, Inc. and Asus Computer International, Inc. (the "Asus Respondents"); Hon Hai Precision Industry Co., Ltd. ("Hon Hai"); Kingston Technology Company, Inc., Kingston Technology (Shanghai) Co. Ltd., and Kingston Technology Far East Co. (the "Kingston Respondents"); Lenovo (United States) Inc., Lenovo Information Products (Shenzhen) Co., Ltd., and Lenovo (Singapore) Pte. Ltd. (the "Lenovo Respondents"); PNY Technologies, Inc. ("PNY"); Research In Motion, Ltd. and Research In Motion Corporation (the "RIM Respondents"); Sony Corporation and Sony Electronics Inc. (the "Sony Respondents"); Sony Ericsson Mobile Communications AB, Sony Ericsson Mobile Communications (USA), Inc., and Beijing SE Putian Mobile Communication Co., Ltd. (the "Sony Ericsson

Respondents"); Transcend Information Inc., Transcend Information Inc. (US), and Transcend Information Inc. (Shanghai Factory) (the "Transcend Respondents"); and, Verbatim Americas LLC and Verbatim Corporation (the "Verbatim Respondents"). (*See* Notice of Investigation, 73 *Fed. Reg.* 77060 (December 18, 2008); Order No. 35 (February 23, 2010).)

The Samsung Respondents are the manufacturers of the accused memory chips. (RIB at 1.) The other respondents incorporate the accused flash memory chips into various other accused products. (*Id.*)

C. The Patents at Issue

1. U.S. Patent No. 6,376,877 ("the '877 patent")

The '877 patent, titled "Double Self-Aligning Shallow Trench Isolation Semiconductor and Manufacturing Method Therefor," was originally filed on February 24, 2000. (JX-003, cover page.) The '877 patent issued to Yu et al. and names Advanced Micro Devices, Inc. as the assignee. (*Id.*) The '877 patent has a total of nine claims. At issue in this investigation are independent claim 1 and dependent claims 2-3 and 5-8.

2. U.S. Patent No. 5,715,194 ("the '194 patent")

The '194 patent, titled "Bias Scheme of Program Inhibit for Random Programming in an NAND Flash Memory" was filed on July 24, 1996. (JX-001, cover page.) The '194 patent issued to Chung-You Hu and names Advanced Micro Devices, Inc. as the assignee. The '194 patent has 22 claims. At issue in this investigation are independent claims 13 and 18 and dependent claims 15-17 and 20-22.

D. Overview of the Technology

1. The '877 Patent

The '877 patent is directed to a semiconductor device with reduced semiconductor geometry and increased device efficiency. (JX-3, Abstract.) The '877 patent teaches using shallow trench isolations for the bit line isolation of floating gates to reduce the semiconductor device geometry. (*Id.* at 2:38-40.) The '877 patent also teaches increasing the surface area of the insulator disposed between the control gate and the floating gate to increase the gate coupling coefficients and provides greater device efficiency. (*Id.* at 2:46-51.) The method of manufacture disclosed accomplishes these aspects of the invention by in part forming multiple concave curves in the surface area profiles of the STI. (*Id.*, Abstract, Fig. 7C.)

2. The '194 Patent

The '194 patent is directed to a system and method for programming flash memory. (JX-1, Abstract.) The '194 patent teaches a system and method that allows for random programming and avoids the problems associated with band-to-band tunneling current. (*Id.* at 2:2-4.) In particular, the invention applies a predetermined voltage along the wordlines adjacent to the programming wordline. (*Id.* at 2:4-4-7.) The disclosed method includes: providing a first wordline coupled with a first device desired to be programmed, the first wordline also coupled with a second device desired to be program inhibited; electrically isolating the second device; programming the first device; and then programming a third device coupled with a second wordline, the second wordline not being adjacent to the first wordline. (*Id.* at 2:7-14.)

E. The Products at Issue

At issue in this investigation are certain flash memory semiconductors and products containing the same. (73 Fed. Reg. 77059 (Dec. 18, 2008).) The flash memory semiconductors at issue in the investigation, as constrained by Spansion's infringement allegations, include Samsung flash memory products within the 51 nm and 42 nm technology nodes bearing the Plan ID's listed in the table below. (CX-1SU (Souri, Wit. Stat.) at Q&A 90, 122, 124.)

Technology Node	Process Flow Plan ID
51 nm	[ ]
42 nm	[ ]

Samsung flash memory products within the 51 nm technology node and 42 nm technology node that are manufactured in accordance with the [ ] and [ ] respectively, are also at issue. (*Id.* at Q&A 122, 124.) Additionally, Samsung's 63 nm, 51 nm, 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products are accused of infringement, as well as, Samsung's 51 nm and 42 nm OneNAND products and Samsung's 42 nm Flex-OneNAND products. (CX-04C (Cottrell Wit. Stat.) at Q&A 186, 278, 315, 322.)

The products at issue containing the accused flash memory semiconductors include memory cards of all varieties, universal serial bus ("USB") drives, and solid state drives ("SSDs"). The products also include computers, mobile phones, smart phones, portable media ("MP3") players, cameras, camcorders, televisions, blu-ray players, and digital picture frames.

II. Jurisdiction and Importation

In order to have the power to decide a case, a court or agency must have both subject matter jurisdiction, and jurisdiction over either the parties or the property involved. 19 U.S.C. § 1337; *Certain Steel Rod Treating Apparatus and Components Thereof*, Inv. No. 337-TA-97, Commission Memorandum Opinion, 215 U.S.P.Q. 229, 231 (1981). For the reasons discussed below, the undersigned finds the Commission has jurisdiction over this investigation.

A. Subject Matter Jurisdiction

Section 337 confers subject matter jurisdiction on the International Trade Commission to investigate, and if appropriate, to provide a remedy for, unfair acts and unfair methods of competition in the importation, the sale for importation, or the sale after importation of articles into the United States. (*See* 19 U.S.C. §§ 1337(a)(1)(B) and (a)(2).) The complaint alleges that Respondents have violated Subsection 337(a)(1)(B) in the importation and sale of products that infringe the asserted patents. (*See* Complaint.) The Samsung Respondents, the Asus Respondents, the Lenovo Respondents, the Sony Respondents, the RIM Respondents, and the Sony Ericsson Respondents have stipulated as to importation, sale for importation, or sale after importation of products accused in this investigation. (CX-193C; CX-911C; CX-1775C; CX-1776C; CX-1777C; CX-1778C; CX-1780C; CX-1781C.) The Remaining respondents, Apple, Hon Hai, the Kingston Respondents, PNY, the Transcend Respondents, and the Verbatim Respondents, have admitted to the importation, sale for importation, or sale after importation of products containing the accused Samsung flash memory devices. (*See* CX-276; CX-284; Hearing, Tr. at 80:21-82-15; Complainants' Motion for Summary Determination that

Respondents Imported, Sold for Importation, and/or Sold After Importation Into the United States Articles that are Subject to this Investigation, EDIS Docket No. 420055 (March 03, 2010), Ex. 13 at 17-18, 62-63, 71, Ex. 14 at 5-6, Ex. 18 at 18, 26-27, Ex. 19 at 5, Ex. 21 at 4, 9, Ex. 22 at 5-12, Ex. 31 at 8-9, Ex. 34 at 3-18.) Thus, the undersigned finds the Commission has jurisdiction over this investigation under Section 337 of the Tariff Act of 1930. *Amgen, Inc. v. U.S. Int'l Trade Comm'n*, 902 F.2d 1532, 1536 (Fed. Cir. 1990).

B. Personal Jurisdiction

The Respondents do not contest that the Commission has personal jurisdiction over them. (*See* RIB at 4.) Each respondent has fully participated in the investigation by, among other things, participating in discovery, participating in the hearing, and filing pre-hearing and post-hearing briefs. Accordingly, the ALJ finds that the Respondents have submitted to the jurisdiction of the Commission. *See Certain Miniature Hacksaws*, Inv. No. 337-TA-237, Pub. No. 1948, Initial Determination at 4, 1986 WL 379287 (U.S.I.T.C., October 15, 1986) (unreviewed by Commission in relevant part).

C. In Rem Jurisdiction

The Commission has in rem jurisdiction over the products at issue by virtue of the above finding that the accused products have been imported into the United States. *See Sealed Air Corp. v. United States Int'l Trade Comm'n*, 645 F.2d 976, 985 (C.C.P.A. 1981).

III. Relevant Law

A. Infringement

A complainant must prove either literal infringement or infringement under the doctrine of equivalents. Infringement must be proven by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). A preponderance of the evidence standard "requires proving that infringement was more likely than not to have occurred." *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n. 15 (Fed. Cir. 2005).

Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). Literal infringement requires the patentee to prove that the accused device contains each and every limitation of the asserted claim(s). *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1378 (Fed. Cir. 2004). Regarding the doctrine of equivalents:

> Infringement under the doctrine of equivalents may be found when the accused device contains an "insubstantial" change from the claimed invention. Whether equivalency exists may be determined based on the "insubstantial differences" test or based on the "triple identity" test, namely, whether the element of the accused device "performs substantially the same function in substantially the same way to obtain the same result." The essential inquiry is whether "the accused product or process contain elements identical or equivalent to each claimed element of the patented invention[.]"

TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc., 529 F.3d 1364, 1376-77 (Fed. Cir. 2008) (citations omitted). Thus, if an element is missing or not satisfied, infringement cannot be found under the doctrine of equivalents as a matter of law. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538-39 (Fed. Cir. 1991). Determining infringement under the doctrine of

equivalents "requires an intensely factual inquiry." *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1381 (Fed. Cir. 2000).

B. Validity

It is Respondents' burden to prove invalidity, and the burden of proof never shifts to the patentee to prove validity. *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1380 (Fed. Cir. 2008). "Under the patent statutes, a patent enjoys a presumption of validity, see 35 U.S.C. § 282, which can be overcome only through facts supported by clear and convincing evidence[.]" *SRAM Corp. v. AD-II Eng'g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006).

The clear and convincing evidence standard placed on the party asserting the invalidity defense requires a level of proof beyond the preponderance of the evidence. Although not susceptible to precise definition, "clear and convincing" evidence has been described as evidence which produces in the mind of the trier of fact "an abiding conviction that the truth of a factual contention is 'highly probable.'" *Price v. Symsek*, 988 F.2d 1187, 1191 (Fed. Cir. 1993) (citing *Buildex, Inc. v. Kason Indus., Inc.*, 849 F.2d 1461, 1463 (Fed.Cir.1988).)

"When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job[.]" *Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984). Therefore, the challenger's "burden is especially difficult when the prior art was before the PTO examiner during prosecution of the application." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1467 (Fed.Cir.1990).

1. Anticipation

"A patent is invalid for anticipation if a single prior art reference discloses each and every limitation of the claimed invention. Moreover, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference." *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (citations omitted). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Continental Can Company USA v. Monsanto Company,* 948 F.2d 1264, 1269 (Fed.Cir.1991). To be considered anticipatory, a prior art reference must describe the applicant's "claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." *Helifix Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1346 (Fed. Cir. 2000) (quoting *In re Paulsen,* 30 F.3d 1475, 1479 (Fed. Cir. 1994)). Anticipation is a question of fact. *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1177 (Fed. Cir. 1993).

2. Obviousness

Under 35 U.S.C. § 103(a), a patent is valid unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but "it is well understood that there are factual issues underlying the ultimate obviousness decision." *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d

1476, 1479 (Fed. Cir. 1997); *Wang Lab., Inc. v. Toshiba Corp.*, 993 F.2d 858, 863 (Fed. Cir. 1993). The underlying factual determinations include: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Although the Federal Circuit has historically required that, in order to prove obviousness, the patent challenger must demonstrate, by clear and convincing evidence, that there is a "teaching, suggestion, or motivation to combine," the Supreme Court has rejected this "rigid approach." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-418 (2007). In KSR, the Supreme Court described a more flexible analysis:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue… As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Id. Since KSR was decided, the Federal Circuit has announced that, where a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, . . . and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007).

IV. The '877 Patent

A. Claim Construction

1. Asserted Claims

Claims 1-3 and 5-8 are asserted in this investigation. Claim 1 is an independent claim. Claims 2-3 and 5-8 depend from claim 1. The asserted claims read as follows:

1. A semiconductor device comprising:

(1) A semiconductor substrate:

(2) insulator shallow trench isolations (STIs) having selected surface area profiles and disposed in the semiconductor substrate, the selected surface area profiles including multiple first and second concave curves, the multiple first concave curves having greater radii than the radii of the multiple second concave curves;

(3) a tunnel oxide (TOX) layer disposed on the semiconductor substrate between the shallow trench isolations;

(4) a first polysilicon (poly) layer disposed over the TOX layer and between the insulator shallow trench isolations to form a floating gate;

(5) an oxynitride (ONO) layer disposed over the first poly layer and the shallow trench isolations, the shallow trench isolation having the multiple first concave curves adjacent to the ONO layer; and

(6) a second poly layer disposed over the ONO layer to form a control gate.

2. The semiconductor device as claimed in claim 1 wherein the selected surface area profiles include the multiple first concave curves above the multiple second concave curves.

3. The semiconductor device as claimed in claim 1 wherein selected surface area profiles include multiple convex curves.

5. The semiconductor device as claimed in claim 1 wherein the selected surface area profiles include multiple first and second concave curves joined by multiple convex curves.

6. The semiconductor device as claimed in claim 1 wherein the STIs have top surfaces and the ONO layer extends below the top surfaces of the STIs.

7. The semiconductor device as claimed in claim 1 wherein the STIs have top surfaces and the ONO layer has a curve extending below the top surfaces of the STIs.

8. The semiconductor device as claimed in claim 1 wherein the STIs have top surfaces and the ONO layer has a upward concave curve extending below the top surfaces of the STIs.

(JX-3 at 7:44 - 8:42.)

2. Disputed Claim Limitations

On February 12, 2010, Order No. 34 issued construing certain claim limitations of the asserted claims of the '877 patent. (*See* Order No. 34.) The construction of those limitations are set forth below.

a. "multiple first and second concave curves, the multiple first concave curves having greater radii than the radii of the multiple second concave curves"

The term "multiple first and second concave curves, the multiple first concave curves having greater radii than the radii of the multiple second concave curves," was construed as "more than one concave curve having a first radii of curvature and more than one concave curve having a second radius of curvature, the multiple first concave curves having greater radii than the radii of the multiple second concave curves." (*See id.* at 40.)

b. "between the insulator shallow trench isolations to form a floating gate"

The term "between the insulator shallow trench isolations to form a floating gate" was construed as having its plain and ordinary meaning. (*See id.* at 41.)

c. "selected surface area profile"

The term "selected" in the phrase "selected surface area profile" was construed as having its plain and ordinary meaning. (*Id.* at 52.) The term "surface area profile," in context of the plain and ordinary meaning of "selected," was construed as "the outline of one side of the STI trench oxide." (*See id.* at 42-52.)

d. "concave curve"/ "convex curve"/ "upward concave curve"

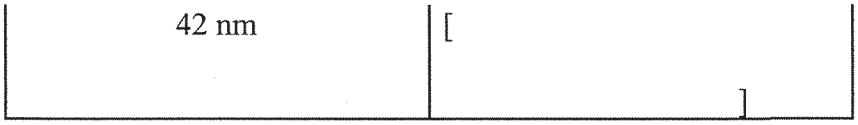
The term "concave curve" was construed as "a curve bent inward toward the STI." (*Id.* at 52-61.) The term "convex curve" was construed as "a curve bent outward away from the STI." (*Id.*) The term "upward concave curve" was construed as "a curve bent inward toward the first poly layer." (*Id.* at 61.)

B. Infringement

To prove infringement of the '877 patent, Spansion primarily relies on the testimony of its expert, Dr. Souri, and the exhibits to which he refers. Spansion also cites to a number of demonstrative exhibits. (*See, e.g.*, CDX-1C, CDX-2C, CDX-3C.)

Dr. Souri opined that the Samsung flash memory products within the 51 nm and 42 nm technology nodes bearing the Plan ID's listed in the table below infringe independent claim 1 and dependent claims 2-3 and 5-8 of the '877 patent. (CX-1SU (Souri, Wit. Stat.) at Q&A 90, 122, 124.)

Technology Node	Process Flow Plan ID
51 nm	[ ]



Dr. Souri also opined that Samsung flash memory products within the 51 nm technology node and 42 nm technology node that are manufactured in accordance with the [ ] and [ ] respectively, infringe the asserted claims of the '877 patent. (CX-1SU (Souri, Wit. Stat.) at Q&A 122, 124.) Dr. Souri testified that in forming his infringement opinions he relied on the '877 patent and its prosecution history, SEM and TEM cross-section images of Samsung flash memory devices, many Samsung documents containing process flow information, process flows, process guides, and third-party reverse engineering reports covering certain Samsung flash memory products. (*Id.* at Q&A 34.)

In particular, with regard to Samsung flash memory products manufactured according to 51 nm processes, Dr. Souri testified that all of the materials he reviewed concerning actual Samsung devices showed the products to infringe. (*Id.* at Q&A 123.) Dr. Souri also testified that all of Samsung's 51 nm processes are based on the [ ] and thus any flash memory chips manufactured in accordance with the [ ] would also infringe. (*Id.*) Dr. Souri further testified that he had seen nothing to suggest that any of Samsung's 51 nm processes would result in products with STI profiles that are different in any relevant respects from the STI profiles of the 51 nm products for which Samsung produced SEM and TEM images. (*Id.*) According to Dr. Souri, Samsung's 51 nm process flows, the [ ] and the SEM and TEM images produced by Samsung of its 51 nm products all show consistent and similar STI profiles. (*Id.*)

With regard to Samsung flash memory products manufactured according to 42 nm processes, Dr. Souri testified that all the materials he reviewed showed that Samsung flash memory products manufactured according to [ ] process flows infringe. (*Id.* at Q&A 125.) Dr. Souri also testified that Samsung's 42 nm processes are based on the [ ] and thus any flash memory chips manufactured in accordance with the [ ] would also infringe. (*Id.* at Q&A 125.) Dr. Souri testified that both the [ ] and the 42 nm process flows show an etch step that shapes the STI oxide to form multiple curves that satisfy the limitations of the asserted claims. (*Id.*) Dr. Souri concluded that based on this fact, the results of his analysis of the resulting STI curves shown in the SEM and TEM images of Samsung's 42 nm flash memory products, and the 42 nm Semiconductor Insights Report, that Samsung 42 nm processes form STI oxide structures with curves that satisfy the limitations of the asserted claims of the '877 patent. (*Id.*)

1. Claim 1

Dr. Souri testified in detail that the accused Samsung flash memory devices meet all the limitations of independent claim 1 of the '877 patent. (*Id.* at Q&A 132-168, 174-206.) Accordingly, Dr. Souri concluded that the accused devices infringe claim 1. In support of his opinions, Dr. Souri relied on a variety of different analysis. (CIB at 12.) First, Dr. Souri analyzed SEMs and TEMs that Samsung produced during discovery in this investigation that show Samsung's products at different stages in the manufacturing process (*i.e.*, before and after the deposition of the ONO layer). (CX-1SU (Souri, Wit. Stat.) at Q&A 137, 179.) Dr. Souri

processed these SEM and TEM images with a computer software program to determine the relative radii of curvature along the surface of the STI oxide. (*Id.* at Q&A 143-45, 184-86.) Dr. Souri testified that the results of his analysis showed two sets of concave curves. (*Id.* at Q&A 145, 186.) Dr. Souri also visually analyzed the high resolution TEM images of Samsung's products and compared his results with the results obtained in reverse engineering reports from Semiconductor Insights. (CIB at 12; CX-1SU (Souri, Wit. Stat.) at Q&A 45, 47, 51, 52.) Additionally, Dr. Souri analyzed Samsung's manufacturing information, *i.e.*, process flows, recipes and process guides, to determine whether Samsung's processes would create the infringing curved structures in Samsung's STI surface area profiles. (CX-1SU (Souri, Wit. Stat.) at 91-107, 109-20.)

The Staff also asserts that the accused products infringe claim 1. (SIB at 1, 10-19.) The Staff focuses its analysis on whether the "wing spacers" in the accused products are part of the STI and whether the accused products have the required multiple first and second concave curves. (*Id.* at 10-19.) With regard to the "wing spacers," the Staff argues that a preponderance of the evidence shows that the "wing spacers" are properly considered part of the STI structure. (*Id.* at 10-11.) In support, the Staff relies on Samsung Patent Application Publication US 2009/0155968, which the Staff asserts, disclosed the process for creating the "wing spacers" in the accused products, Dr. Souri's opinion that the wing spacers are etched out of the STI insulating oxide, and the fact that the alleged curves in the wing spacers in the accused products are adjacent to the floating gate in the same position as the curves in the '877 patent. (*Id.* at 11-13.) The Staff notes, however, that there is some ambiguity as to whether Samsung's "wing

spacers" are the same as conventional sidewall spacers. (*Id.* at 12.) The Staff also notes that Dr. Given's testimony, on which Dr. Souri relied in support of his contention that the wing spacers are etched out of the STI insulating oxide, does not support that proposition. (*Id.* at 13.) With regard to the required multiple first and second concave curves, the Staff argues that while there appeared to be a conflict in the evidence as to whether the wing spacers show one simple convex curve and one concave curve, or show one convex curve and two concave curves, Respondents' expert, Dr. Givens, testified that he was able to see a concave curve that was part of the wing spacer oxide in the SEM and TEM images on which Spansion relies. (*Id.* at 15-16.) Based on that testimony and Dr. Souri's analysis of the curves in the "wing spacers," the Staff concludes that a preponderance of the evidence shows that the accused products have the required multiple first and second concave curves. (*Id.* at 19.) The Staff notes that the [ ] has a design drawing that shows no upper concave curve in the "wing spacers" and that Respondents' witness, Dr. Kim, relying on the process guide, testified that the top of the wing spacer does not have an concave curve. (*Id.* at 17-18.) However, the Staff finds Dr. Kim's testimony to be inherently biased and insufficient to overcome the alleged admission by Respondents' expert, Dr. Givens. (*Id.* at 19.)

Respondents argue that its accused flash memory devices do not infringe claim 1 because: (1) they do not have curves in the side of the STI trench oxide as required by the construction of the limitation "selected surface area profile"; (2) they do not have the claimed multiple second concave curves with a second radius of curvature; (3) they do not have the claimed multiple first concave curves with a first radius of curvature; and (4) the alleged first concave curves are in the

wing spacer oxide, not the STI trench oxide as required by the construction of the limitation "selected surface area profile." (RIB at 7, 9, 13, 21;RX-2142C (Givens, Wit. Stat.) at 16, 44, 55.)

For the reasons discussed in detail below, the undersigned finds that the accused products do not infringe claim 1 of the '877 patent.

Claim 1 requires a device that has "insulator shallow trench isolations (STIs) having selected surface area profiles ... the selected surface area profiles including multiple first and second concave curves." (JX-03 at 7:46-47.) This claim language is unclear in that it can be read as requiring each of the STIs to have a single surface area profile or multiple surface area profiles. In Order No. 34, the undersigned construed the term "surface area profile," in the singular, to mean "the outline of one side of the STI trench oxide."[1] (Order No. 34 at 52.) In reaching that proper claim construction, it was noted that the specification describes Figure 4A, reproduced below, as showing STIs 316A-318A "having the single curved surface area profiles 320A." (JX-03 at 5:21-25, Fig. 4.) As stated in Order No. 34, Figure 4A "clearly illustrates ... that the profile 320A points to a single side of the STI, not both sides." (Order No. 34 at 50.) Yet, as seen in Figure 4A, each STI has not one, but two single curved surfaces, one on each side of the STI. Thus, each STI has not one, but two profiles. Therefore, the undersigned construes claim 1 of the '877 patent as requiring each STI to have more than one surface area profile, with

[1] Notably, this was the claim construction proposed by complainant Spansion. (*See* Order No. 34 at 41-42.)

the term "selected" referring to the fact that the surface area profiles, plural, include the claimed multiple first and second concave curves.[2]

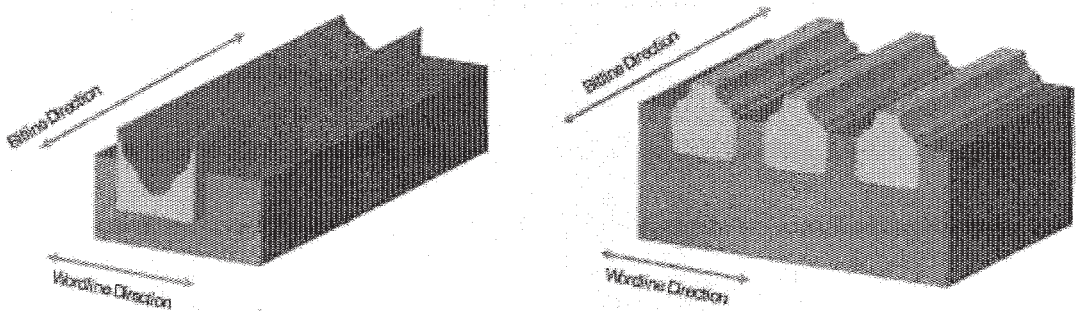
To find otherwise would result in an interpretation of claim 1 in which each STI has a single surface area profile. Based on the undersigned's construction of "surface area profile," that would mean that claim 1 would require the outline of one side of the STI trench oxide to include the multiple first and second concave curves." Yet, the preferred embodiments of the invention shown in Figures 4C, 5C, 6C and 7C do not show the multiple first and second concave curves in the outline of one side of the STI trench oxide. (JX-03, Figs. 4C-7C.) The Figures plainly show the multiple first and second concave curves on two sides of the STI trench oxide. Thus, to construe claim 1 as requiring each STI to have a single surface area profile would be to read out these embodiments from the claims. Such a result is not reasonable under these circumstances. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (claim interpretations, which operate to exclude a preferred embodiment, are "rarely, if ever, correct.")

In accordance with Spansion's infringement contentions, CDX-1C, below, shows an illustration of an STI in the accused products (the left image) juxtaposed to an illustration of the STIs shown in Figures 4C, 5C, 6C, and 7C of the '877 patent (the right image). Also below are the annotated SEM/TEM images from CDX-2C and CDX-3C that show where Spansion

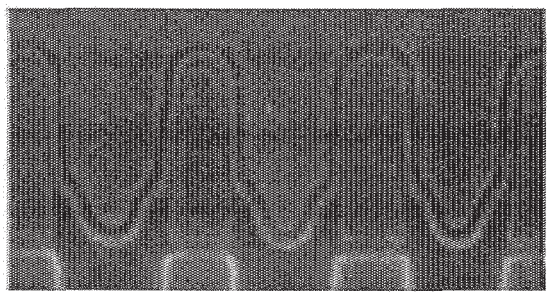
---

[2] Spansion's expert Dr. Souri seeming agrees with this interpretation. (*See* CDX-1 at 14 (identifying the multiple first and second concave curves in the '877 patent on two sides of the STI).)

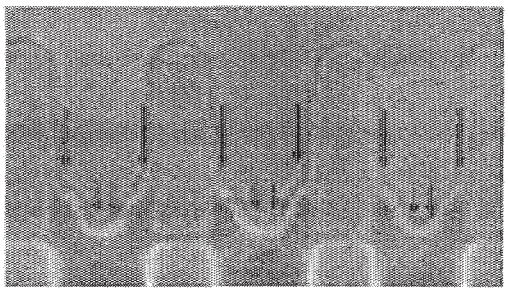
contends the claimed multiple first and second concave curves are located in the STIs of Samsung's accused products in the 51nm and 42nm technology nodes, respectively.



CDX-1C at 7



CDX-2C at 3, 8

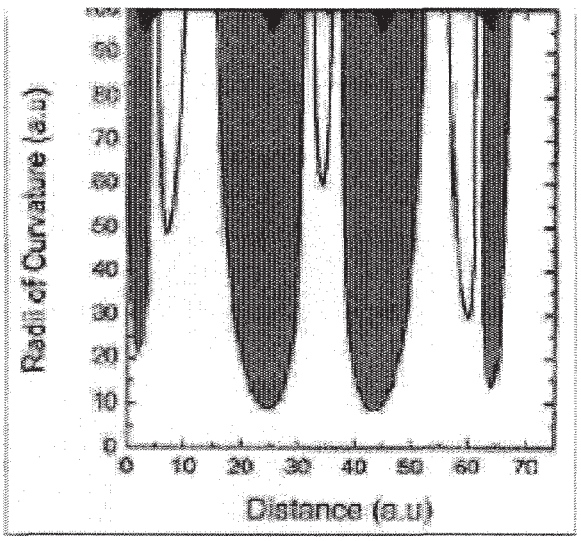


CDX-3C at 8

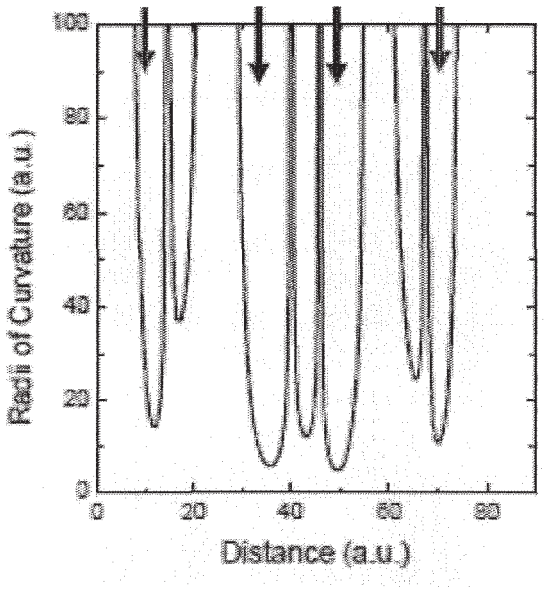
Putting aside Respondents' arguments that the top of the STI is not a "side" as that term is used in the undersigned's construction of the phrase "surface area profile" and that the "wing-spacers" are not part of the unitary STI structure, *i.e.*, not part of the STI trench oxide, as shown in the figures above, Spansion only identifies the top of the STI in the accused products as including the claimed multiple first and second concave curves. Thus, Spansion's infringement contention is that the multiple first and second concave curves reside in the outline of a single side of the STI trench oxide.

Claim 1, however, requires each STI to have not just one, but more than one surface area profile, *i.e.*, "surface area profiles," and the surface area profiles, plural, must include the multiple first and second concave curves. Because Spansion only identifies a single surface area profile for each STI in Samsung's accused flash memory devices in the 51nm and 42nm technology nodes that includes the multiple first and second concave curves, the undersigned finds that Spansion has failed to prove that the accused products meet the limitation of claim 1 requiring "insulator shallow trench isolations (STIs) having selected surface area profiles ... the selected surface area profiles including multiple first and second concave curves."

Moreover, the undersigned does not find that what Spansion contends are the claimed curves satisfy the limitation of claim 1 requiring multiple first and second concave curves. Dr. Souri testified that Samsung's accused products have the required multiple first and second concave curves. (CX-1SU (Souri, Wit. Stat.) at Q&A 136, 178.) Dr. Souri testified that he based that opinion on his review of SEM and TEM images produced by Samsung, images from Semiconductor Insights reverse engineering report, the 51nm and 42nm process flows produced by Samsung and the Jasper and Cubic-F Process Guides. (*Id.* at Q&A 137, 179.) To confirm his opinion, Dr. Souri testified that he took digital SEM and TEM images, "faithfully reproduced" the contours of the curves therein, and then used a well know computer software program to graph the curves and express them mathematically. (*Id.* at Q&A 144, 184-85.) According to Dr. Souri, the analysis allowed him to identify both concave and convex curves and determine the relative sizes of the radii of curvature. (*Id.* at Q&A 144.) The results of Dr. Souri's analysis are reproduced below. (*See* CDX-2C at 3; CDX-3C at 3.)



51 nm Products



42 nm Products

Dr. Souri testified that the above graphs show that Samsung's accused products have multiple first concave curves and multiple second concave curves. (*Id.* at Q&A 145.) The undersigned disagrees. In particular, the undersigned finds that the graphs do not show multiple first concave curves. For Samsung's accused products in the 51 nm technology node, the graph clearly shows that one of the identified first concave curves has a radii of curvature of approximately 21 and the other identified first concave curve has a radii of curvature of approximately 15. Likewise, for Samsung's products in the 42 nm technology node, the graph clearly shows that one of the identified first concave curves has a radii of curvature of approximately 17 and the other has a radii of curvature of approximately 11. Because the two identified first concave curves have different relative radii of curvature they are in fact two different curves. Accordingly, the

undersigned finds that Spansion has failed to prove that Samsung's accused products have "selected surface area profiles including multiple first ... concave curves."[3]

Because Spansion has failed to prove that Samsung's accused products in the 51nm and 42nm technology nodes have first concave curves, as well as, surface area profiles that include the claimed multiple first and second concave curves, the undersigned finds that Samsung's accused products do not infringe independent claim 1 of the '877 patent.

2. Claims 2-3 and 5-8

Claims 2-3 and 5-8 are dependent claims that all depend from independent claim 1. Because the undersigned has found hereinabove that the accused products do not infringe independent claim 1, dependent claims 2-3 and 5-8 are also not infringed. *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989) ("It is axiomatic that dependent claims cannot be found infringed unless the claims from which they depend have been found to have been infringed.")

C. Validity

1. Level of Ordinary Skill in the Art

The undersigned determined in Order No 34 that the level of ordinary skill in the art for the '877 Patent is a person with a Bachelor's of Science degree in materials science, chemical

---

[3] The evidence is also not clear as to whether the identified first concave curves are in fact "concave." The SEM and TEM images that Samsung rely on are so blurry as to make Dr. Souri's visual identification of the first concave curves unreliable. (*See, e.g.*, JX-68C, JX-71C, JX-74C, JX-75C; JX-114C; JX-119C.) Moreover, the Jasper Guide includes an image, on which Dr. Souri relies, that plainly shows no first concave curves, but rather two convex curves that terminate at the gate stack. (*See* CDX-1 at 10; *see also*, Kim, Tr. at 1335-36.)

engineering, electrical engineering, chemistry, or physics, with two years of processing experience related to memory device fabrication. (Order No. 34 at 6-7.)

2. Anticipation

a. Toshiba 256M NAND Flash Device

Respondents argue that a Toshiba 256M NAND flash product, part number TC58256DC-CT0501 ("Toshiba 256M NAND Flash") anticipates the asserted claims of the '877 patent. (RIB at 31-34.) Respondents argue that the Toshiba 256M NAND Flash is prior art under 35 U.S.C. 102(a) because it was disclosed in a publication by Imamiya ("Imamiya Publication") in November 1999 in the IEEE Journal of Solid-State Circuits and was commercially available for purchase in the United States before the February 24, 2000 filing date of the '877 patent. (*Id.* at 26-29.) In support of their invalidity contentions, Respondents rely on their expert, Dr. John Givens, who testified in detail how the Toshiba 256M NAND Flash device meets the limitations of the asserted claims. (*See* RX-122C (Givens Wit. Stat.) at Q&A 104-114.)

Spansion argues that the Toshiba 256M NAND Flash does not anticipate or render obvious the asserted claims of the '877 patent. (CIB at 32.) Spansion argues that during cross-examination, Respondents' expert, Dr. Givens, conceded that the Toshiba 256M NAND Flash was not anticipatory prior art. (*Id.* at 33.) Spansion also argues that the Toshiba NAND Flash does not disclose multiple first concave curves. (*Id.*) In fact, Spansion asserts that Dr. Givens conceded that what he considered were the multiple first concave curves required by the asserted claims was really one large concave curve. (*Id.*) Additionally, Spansion argues that TEM images of the Toshiba 256M NAND Flash fail to identify any of the several device layers or their

chemical compositions required by the asserted claims and that Respondents' reliance on the Imamiya Publication to overcome that deficiency is misplaced. (*Id.* at 35-36.) Spansion also asserts that Respondents did not allege that the Imamiya Publication was prior art. (*Id.* at 35.) Regardless, Spansion argues that the invention date of the '877 patent precedes the February 7, 2000 critical date of the Toshiba 256M NAND Flash. (*Id.* at 36-38.)

Like Spansion, the Staff also argues that the Toshiba 256M NAND Flash does not anticipate the asserted claims of the '877 patent. (SIB at 30.) In particular, the Staff argues that the Toshiba 256M NAND Flash is not prior art under 35 U.S.C. § 102(a) because Respondents failed to show that the 256M NAND Flash was publicly used or displayed to customers in the United States. (*Id.* at 30-32.) The Staff also argues that, to the extent that Respondents rely on Toshiba 256M NAND Flash in addition to the Imamiya Publication to prove invalidity, Respondents are not really arguing anticipation, but rather obviousness under 35 U.S.C. § 103. (*Id.* at 35-36.) Further, the Staff argues that Respondents never relied on the Imamiya Publication as anticipatory in its pre-hearing brief. (*Id.* at 34.)

Whether something constitutes prior art is a question of law. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987). Section 102(a) of Title 35 of the United States Code provides that a person shall be entitled to a patent unless "the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent." (35 U.S.C. § 102(a).) Thus, according to the language of the statute, Section 102(a) requires "knowledge or use which is accessible to the public." *Carella v. Starlight Archery*, 804 F.2d 135, 139 (Fed. Cir. 1986). As

previously stated, Respondents argue that the Toshiba 256M NAND Flash device is prior art under 35 U.S.C. § 102(a) because it was disclosed in the Imamiya Publication in November 1999 in the IEEE Journal of Solid-State Circuits and was commercially available for purchase in the United States before the filing date of the '877 patent. With regard to Respondents' argument that the Toshiba 256M NAND Flash was known because it was disclosed in the Imamiya Publication, the undersigned finds that Respondents never asserted this argument in their pre-hearing brief and therefore, pursuant to Ground Rule 8.2, have waived any such argument.[4]

With regard to Respondents' argument that the commercial availability of the Toshiba 256M NAND Flash for purchase in the United States prior to the date of invention of the asserted claims of the '877 patent constitutes a prior use under Section 102(a), the record demonstrates the following facts. The Toshiba 256M NAND Flash was manufactured at least as early as the 28th week of 1999, and was publicly available for sale in the United States at least as early as February 7, 2000. (RX-122C (Givens Wit. Stat.) at Q&A 95-100; JX-012C; JX-013C; JX-024C; JX-037C.) On February 7, 2000, [

]

---

[4] In their pre-hearing brief, Respondents only state:

> All of the asserted claims of the '877 patent are anticipated by a Toshiba 256M NAND flash product, part number TC58256DC-CT0501 ("Toshiba 256M NAND Flash"). The Toshiba 256M NAND Flash was manufactured at least as early as the 28th week of 1999, and was publicly available for sale in the United States at least as early as February 7, 2000, which was before the '877 patent was filed. Thus, the Toshiba 256M NAND Flash constitutes a prior use under 35 U.S.C. § 102(a).

(Respondent Pre-Hearing Brief at 110-11 (internal citations omitted).)

[

] (*Id.*; JX-037C.)

As set forth above, the evidence of record shows only that a sale of Toshiba 256M NAND Flash chips occurred, which resulted in the chips being shipped to Canada. Respondents argue that this prior sale constitutes a Section 102(a) prior use. (RIB at 28-29.) In support, Respondents rely on *Foster v. Hallco Manufacturing Co., Inc.*, 1991 WL 340568, *4 (D. Or. 1991). Respondents assert that the court in *Foster* found a Section 102(a) prior use based on the undisputed evidence that the slat-type reciprocating floor conveyors at issue in that case were sold in California to an individual in Canada prior to the invention date. (RIB at 28.)

The undersigned disagrees. In *Foster*, the court stated:

> However, it is undisputed that Hallco sold its three-cylinder units to C.P. Bulk and made the later modifications [to six-cylinder units] during 1977. It is also undisputed that the six-cylinder units were offered to Philip Loduca of Lodi, California in the fall of 1981. These facts are sufficient to support the conclusion that Hallco's unit was "known by others in this country" prior to Foster's invention ... and "on sale in this country" more than one year prior to the date of the application."

Foster, 1991 WL 340568 at *4. As is clear from the above quote, the court was considering both the sale to C.P. Bulk and the offer to Loduca when it found that the Hallco's floor conveyors were known by others in this country and on sale in this country more than one year before the date of invention. The critical date for Foster's invention was February of 1982. *Id.* Therefore, the court in *Foster* must have been referring to the sale and modifications to C.P. Bulk in 1977

when it stated that the facts were sufficient to support the conclusion that the invention was on sale more than one year prior to the date of invention, because the offer to Loduca was made in the fall of 1981, which is less than one year prior to the February 1982 date of invention. Notably, the court explicitly states earlier in the opinion that when Loduca contacted Hallco about its need for two reciprocating floor conveyors that Hallco described the structure of the six-cylinder floor conveyors to Locuca. *Id.* at *3. Thus, it appears that the court was referring to the offer to Loduca when it concluded that the Hallco six-cylinder floor conveyors were known by others in this country, not the sale as Respondents contend. Moreover, the undersigned finds Respondents' argument that "a sale" can constitute "a prior use" under Section 102(a) is difficult to reconcile with the language of Section 102(b), which provides that a "public use or sale in this country" one year before the date of invention constitutes prior art. *See* 35. U.S.C. 102(b). Not only did Congress explicitly incorporate "sales" in the language of Section 102(b) and not in Section 102(a), but as is evident from the language of Section 102(b), Congress considered "use" and "sale" to be different concepts. Accordingly, for the reasons discussed above, the undersigned finds that *Foster* fails to support Respondents' argument.

Because the record evidence only establishes that there was a sale of Toshiba 256M NAND Flash chips to an entity in Canada, the undersigned finds that Respondents have failed to prove that the Toshiba 256M NAND Flash was known or in use in the United States before date of invention of the '877 patent. Thus, the Toshiba 256M NAND flash is not prior art under 35 U.S.C. § 102(a). Accordingly, the undersigned finds that the Toshiba 256M NAND Flash cannot anticipate the asserted claims of the '877 patent.

b. Toshiba Patent Application

Respondents argue that Japanese Unexamined Patent Application H8-64700 ("the Toshiba Patent Application") anticipates the asserted claims of the '877 patent. (RIB at 35-38.) The Toshiba Patent Application was published March 8, 1996, more than a year prior to the filing date of the '877 patent. (*See* RX-092 at SEC-ITCSP-000661231; RX-122C (Givens Wit. Stat.) at Q&A 41, 44.) Thus, it is prior art under 35 U.S.C. § 102(b). In support of its anticipation argument, Respondents rely on the testimony of its expert, Dr. Givens, who testified in detail that the Toshiba Patent Application disclosed each of the elements of the asserted claims of the '877 patent. (RX-122C (Givens Wit. Stat.) at Q&A 46-55; Givens Tr., at 1614-17.)

Spansion argues that the Toshiba Patent Application does not anticipate the asserted claims of the '877 patent. (CIB at 39-41.) In particular, Spansion argues that Dr. Givens' reliance on the figure in the Toshiba Patent Application to show the required curves is wrong as a matter of law. (*Id.* at 39.) Spansion also argues that the Application fails to disclose multiple first concave curves. (*Id.* at 40.)

Like Spansion, the Staff also finds that the Toshiba Patent Application does not anticipate the asserted claims. (SIB at 23-28.) The Staff argues that the Application fails to disclose a first set of concave curves having greater radii than a second set of concave curves. (*Id.* at 23.) The Staff also argues that Dr. Givens reliance on the Figures in the Application to show the required first and second concave curves is misplaced as the figures are unreliable. (*Id.* at 25.) Further, the Staff argues that the evidence does not clearly and convincingly show that the alleged second set of concave curves are really curves and not just corners. (*Id.* at 25-26.)

Among the limitations recited in independent claim 1 of the '877 patent is the requirement that the radii of the multiple first concave curves be greater than the radii of the multiple second concave curves. (*See* JX-03.) Dr. Givens testified for Respondents that:

> It is my opinion that the Toshiba Patent Application discloses this limitation.
>
> Specifically Figure 3 of the Toshiba Patent Application discloses STIs that have multiple first and second concave curves located in the outlines of one side of the STI trench oxide where the concave curves bend inward toward the STI. These four concave curves disclosed in Figure 3 include two concave curves on the bottom of the sides of the STI and two concave curves on the upper portion of the sides of the STIs. In addition as shown in Figure 3 the curves on the upper sides of the STIs have greater radii than the curves on the lower sides of the STI. In other words if a circle is drawn to fit the concave curves the circle for the upper concave curves would be larger than the circle for the lower concave curves. Consequently the upper concave curves are the multiple first concave curves and the lower concave curves are the multiple second concave curves as defined by claim 1.
>
> In RDX-103 I have indicated where the claimed selected surface area profiles with the multiple first and second curves are found in an annotated version of Figure 3 of the Toshiba Patent Application.

(RX-122C (Givens Wit. Stat.) at Q&A 55.) As quoted above, Dr. Givens relies on Figure 3 of the Toshiba Patent Application to show the disclosure of multiple first concave curves with radii greater than the radii of the multiple second concave curves. (*Id.*; *see also* RDX-103.) Figure 3, however, is not an image of an actual product. It is merely a freehand drawing.

It is well established that patent drawings do not define the precise proportions of the elements in the drawing and may not be relied on to show particular sizes if the specification is completely silent on the issue. *Nystrom v. Trex Co.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005); *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000). Here, the Toshiba Patent Application is completely silent as to the dimensions and scale of Figure 3.

(*See* RX-092.) In fact, the Toshiba Patent Application appears to lack any pertinent description of Figure 3. (*Id.*) Thus, the undersigned finds Dr. Givens' reliance on Figure 3 misplaced and insufficient to show that the Toshiba Patent Application discloses first concave curves with radii greater than the radii of the second concave curves.

Dr. Givens also relies on the process disclosed in the Toshiba Patent Application for etching the curves in the STIs as proof that the Application discloses the claimed multiple first and second concave curves. (RX-122C (Givens Wit. Stat.) at Q&A 56-57.) However, the Toshiba Patent Application only discloses the use of dry-etch steps to shape the STIs and the evidence of record suggests that dry etching is highly directional, and does not result in curves, but rather straight and cornered features. (*See* RX-92; CX-3639C (Souri, Wit. Stat.) at Q&A 50.) Dr. Givens appears to agree with Dr. Souri's opinion regarding wet etching in that he stated in the context of infringement that a "dry etch is anisotropic ... [and is] directional in the vertical direction, so it is etching everything that's on the top of the surface at the same rate, and then it is also etching fairly vertical down the sidewalls." (Givens, Tr. at 1571.) Thus, the undersigned finds that Dr. Givens has failed to show that the specification of the Toshiba Patent Application discloses the claimed multiple first and second concave curves.

Accordingly, for the reasons above, the undersigned finds that Respondents have failed to prove by clear and convincing evidence that the Toshiba Patent Application anticipates the asserted claims of the '877 patent.

c. Shimizu Publication

Respondents argue that an article titled "A Novel High-Density $5F^2$ NAND STI Cell Technology Suitable for 256Mbit and 1Gbit Flash Memories" by K. Shimizu et al. ("Shimizu Publication") anticipates the asserted claims of the '877 patent. (RIB at 39-42.) The Shimizu Publication was published by the IEEE in 1997, which is more than a year prior to the filing date of the '877 patent. (RX-02 at SEC-ITCSP-000630239; RX-122C (Givens Wit. Stat.) at Q&A 41, 74.) Thus, it is prior art under 35 U.S.C. § 102(b). 35 U.S.C. § 102(b). In support of its anticipation argument, Respondents rely on the testimony of its expert, Dr. Givens, who testified in detail that the Shimizu Publication disclosed each of the elements of the asserted claims of the '877 patent. (RX-122C (Givens Wit. Stat.) at Q&A 73-93.)

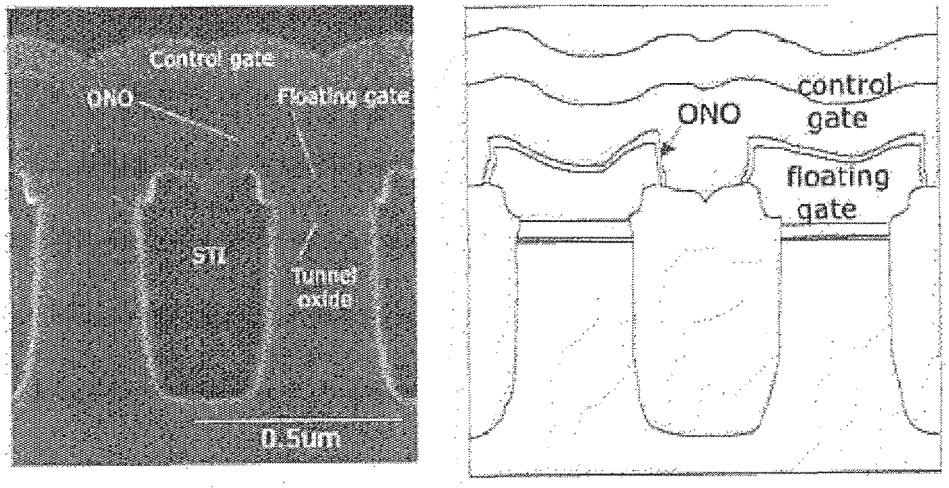
Spansion argues that the Shimizu Publication does not anticipate the asserted claims of the '877 patent. (CIB at 38-39.) In particular, Spansion argues that the SEM image that Respondents' expert, Dr. Givens, relies on in support of his invalidity opinion is virtually unreadable. (*Id.* at 38.) Spansion also argues that the Shimizu reference itself contradicts Dr. Givens' testimony in that the reference contains a line drawing that plainly shows only convex curves in the STI region. (*Id.* at 39.) Spansion further argues that Dr. Givens' opinion is contradicted by the prosecution history of the '877 patent. (*Id.*) Specifically, Spansion argues that during the hearing Dr. Givens admitted that the PTO Examiner considered a reference by Guillaumot and determined that the STIs in the Guillaumot reference showed flat or angled isolation structures. (*Id.*) Spansion argues that because there is a remarkable similarity in the

STI surface area profiles of Guillaumot and Shimizu, the STIs in Shimizu are best characterized as flat or angled. (*Id.*)

The Staff also argues that the Shimizu Publication does not anticipate the asserted claims. (SIB at 28.) In particular, the Staff argues that the reference does not show concave curves. (*Id.* at 29.) Like Spansion, the Staff argues that Dr. Givens' opinion is contradicted by the reference itself, which includes a line drawing that plainly shows only convex curves. (*Id.*)

Among the limitations recited in independent claim 1 of the '877 patent is the requirement that each STI has selected surface area profiles that include multiple first and second concave curves, the multiple first concave curves have a greater radii than the radii of the multiple second concave curves. (*See* JX-03.) Samsung asserts that in Figure 3 of the Shimizu Publication the outline of the STI includes a pair of upper curves bent inward toward the STI oxide (labeled "1" and "2") and a second pair of lower curves bent inward toward the STI oxide (labeled "3" and "4"). (RX-2, Fig. 3(a); RX-122C (Givens, Wit. Stat.) at Q&A 80; RDX-114.) To illustrate his opinion, Dr. Givens' relies on an enhanced demonstrative of Figure 3(a). (RX-122C (Givens, Wit. Stat.) at Q&A 80; RDX-114.) Although Dr. Given's opines that his enhanced demonstrative discloses the claimed multiple first and second concave curves, the undersigned is unpersuaded.

In particular, as shown below, Figure 3(a) of the Shimizu Publication includes both an SEM image and a line drawing.



(a) Parallel to the control gate line

(RX-2, Fig. 3(a).) Contrary to Dr. Givens' testimony, the undersigned finds the SEM image too blurry, even in Dr. Givens' enhanced demonstrative, to discern whether there are curves at the top of the STI structure. Moreover, the line drawing plainly shows no concave curves, but rather only a convex curve facing inward toward the ONO layer. Additionally, there is nothing in the written portion of the reference that describes the curves. Thus, the undersigned finds that Dr. Givens has failed to show by clear and convincing evidence that Figure 3(a) discloses the claimed multiple first and second concave curves. Accordingly, the undersigned finds that Respondents have failed to prove that the Shimizu Publication anticipates the asserted claims of the '877 patent.

3. Obviousness

a. Toshiba 256M NAND Flash Device in Combination with Toshiba Patent Application

Respondents argue that claims asserted claims of the '877 patent are obvious in light of the Toshiba 256M NAND Flash in combination with the Toshiba Patent Application. However, the undersigned has already found herein that the Toshiba 256M NAND Flash is not prior art. (*See supra*, at IV.C.2.a.) Thus, the undersigned finds that the combination of the Toshiba NAND Flash with the Toshiba Patent Application cannot render obvious the claims of the '877 patent. *See* 35 U.S.C. § 103.

b. Shimizu Publication in Combination with Toshiba Patent Application

Respondents argue that the Shimizu Publication in combination with the Toshiba Patent Application renders the asserted claims of the '877 patent obvious. However, the undersigned has already found herein that neither the Shimizu Publication nor the Toshiba Patent Application disclose the limitation of claim 1 requiring "selected surface area profiles including multiple first and second concave curves, the multiple first concave curves having greater radii than the radii of the multiple second concave curves." (*See supra*, at IV.C.2.b, IV.C.2.c.) Because neither reference discloses the above limitation, the combination of the references will also not disclose it. Accordingly, the undersigned finds that the combination of the Shimizu Publication and Toshiba Patent Application do not render obvious the asserted claims of the '877 patent.

V. The '194 Patent

A. Claim Construction

1. Asserted Claims

Claims 13, 15-18 and 20-22 of the '194 patent are asserted in this investigation. Claims 13 and 18 are independent claims. Claims 15-17 depend from claim 13. Claims 20-22 depend from claim 18. The asserted claims read as follows:

13. A method of programming in a Flash memory comprising the steps of:

(a) providing a first voltage to a first wordline, the first wordline being coupled to a first device to be programmed, the first wordline also being coupled to second device to be program inhibited;

(b) providing a second voltage along a channel region of a third device;

(c) providing a third voltage to a bitline coupled with the first device; and

(d) providing a fourth voltage to a second wordline adjacent to the first wordline such that

(i) the fourth voltage is less than the sum of

(1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and

(2) the second voltage, and

(ii) the fourth voltage is also greater than the sum of

(1) a threshold voltage of the fifth device adjacent to the first device; and

(2) the third voltage.

15. The method of claim 13, wherein the fourth voltage is provided to a plurality of wordlines.

16. The method of claim 13, further comprising step (e) of ensuring that the fifth device is on.

17. The method of claim 13, further comprising step (e) of ensuring that the fourth device is off.

18. A Flash memory system comprising:

a first wordline with a first voltage coupled to a first device to be programmed, the first wordline also being coupled to a second device to be program inhibited;

a third device with a second voltage along a channel region;

a bitline coupled with the first device, the bitline having a third voltage; and

a second wordline adjacent to the first wordline, the second wordline having a fourth voltage such that:

the fourth voltage is less than the sum of

a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and

the second voltage, and

the fourth voltage is also greater than the sum of

a threshold voltage of a fifth device adjacent to the first device; and

the third voltage.

20. The system of claim 18, wherein the fourth voltage is provided to a plurality of wordlines.

21. The system of claim 18, wherein the fifth device is on.

22. The system of claim 18, wherein the fourth device is off.

2. Disputed Claim Limitations

On February 12, 2010, Order No. 34 issued construing certain claim limitations of the asserted claims of the '194 patent. (*See* Order No. 34.) The construction of those limitations is set forth below.

a. "a method of programming in a Flash memory" / "a Flash memory system"

The phrase "a method of programming in a Flash memory" is found in the preamble of independent claim 13. The phrase "a Flash memory system" is found in the preamble of independent claim 18. In Order No. 34, the undersigned found that the preambles to claims 13 and 18 should not be construed so as to limit the claims. (Order 34 at 67.) The undersigned also found that the preambles should not be construed as requiring randomly programmable flash memory. (*Id.*)

b. "a first device to be programmed"

The limitation " a first device to be programmed" was construed as having its plain and ordinary meaning. (*Id.* at 69.)

c. "threshold value"

The limitation "threshold value" was construed to mean the threshold value of a device whether programmed or erased. (*Id.* at 73.)

d. "adjacent to"

The limitation "adjacent to" was construed to mean "next to." (*Id.* at 78.) Notably, Spansion's proposed construction of "adjacent to" as meaning "near" was rejected. On that point, the undersigned stated that "[t]here is absolutely nothing in the patent, and certainly

nothing Spansion points to, that explains how one of ordinary skill in the art would be able to determine what qualifies as 'near.'" (*Id.* at 78 n. 16.)

e. "ensuring the fourth device is off" / "ensuring the fifth device is on"

The limitations "ensuring the fourth device is off" and "ensuring the fifth device is on" were construed as not further limiting independent claims 13 and 18. (*Id.* at 82-83.) The undersigned found that these dependent claim limitations repeat the necessary results of the claimed "on/off" equations for the fourth voltage in the independent claims. (*Id.*) That is, if the claimed equations in the independent claims are satisfied, the "fourth device" must be off and the "fifth device" must be on.

B. Infringement

To prove infringement of the '194 patent, Spansion primarily relies on the testimony of its expert, Dr. Peter Cottrell, and the exhibits to which he refers. Spansion also relies on a number of demonstrative exhibits.

Dr. Cottrell opined that Samsung's MLC NAND 63 nm, 51 nm, 42 nm, 35 nm, 32 nm, and 27 nm products infringe the asserted claims of the '194 patent. (CX-04C (Cottrell Wit. Stat.) at Q&A 186.) In particular, Dr. Cottrell opined that Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products literally infringe and all of Samsung's accused MLC NAND products infringe under the doctrine of equivalents. (*Id.* at Q&A 50-51.) Dr. Cottrell also opined that Samsung's OneNAND 51 nm and 42 nm products and Samsung's Flex-OneNAND 42 nm products literally infringe. (*Id.* at Q&A 50, 278, 315, 322.)

1. MLC NAND

a. Literal Infringement

1) Independent claims 13 and 18 [5]

Dr. Cottrell testified in detail for Spansion that Samsung's MLC NAND 42 nm, 35 nm, 32 nm, and 27 nm products satisfy all of the limitations of claims 13 and 18 of the '194 patent. (CX-04C (Cottrell Wit. Stat.) at Q&A 188-91, 296, 338, 369, 378, 381, 386, 390, 396, 410, 412.) Accordingly, Dr. Cottrell concluded that the accused MLC NAND 42 nm, 35 nm, 32 nm, and 27 nm products literally infringe claims 13 and 18.

Respondents argue that the MLC NAND 42 nm, 35 nm, 32 nm, and 27 nm products do not infringe claims 13 and 18. (RIB at 42-43.) In particular, Respondents argue that these MLC NAND products do not infringe because: (1) there is no "third device"; and (2) the "second voltage" along the channel region of the accused "third device" is zero (or very close thereto) and thus cannot satisfy the claimed "Off" equation in element (d) of claims 13 and 18.[6] (*Id.* at 58-60.)

The Staff also asserts that Samsung's MLC NAND 42 nm, 35 nm, 32 nm, and 27 nm products do not literally infringe, arguing that Spansion has not shown that the accused products satisfy element (d) of claims 13 and 18. (SIB at 49.)

---

[5] For all intents and purposes, independent claim 13 is the same as independent claim 18, the primary difference being that claim 18 is a product claim and claim 13 is a method claim. All parties address independent claims 13 and 18 together for purposes of determining infringement/non-infringement.

[6] Although there is nothing labeled as "(d)" *per se* in independent claim 18, the exact same limitations in element (d) of independent claim 13 are found in claim 18.

For the reasons discussed in detail below, the undersigned finds that Samsung's accused MLC NAND 42 nm, 35 nm, 32 nm, and 27 nm products do not meet the requirements of element (d) of independent claims 13 and 18 of the'194 patent and therefore do not literally infringe.

Element (d) reads as follows:

(d) providing a fourth voltage to a second wordline adjacent to the first wordline such that
  (i) the fourth voltage is less than the sum of
    (1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and
    (2) the second voltage, and
  (ii) the fourth voltage is also greater than the sum of
    (1) a threshold voltage of the fifth device adjacent to the first device; and
    (2) the third voltage.

Spansion argues that when programming either the top or the bottom wordline in Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products, a voltage is applied to the adjacent [ ] wordline that satisfies all the limitations of element (d). (CIB at 44.) To better understand Spansion's argument, an example of an array with [ ] wordlines, as is used in Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products, is shown below.

[ ]

[ ]

(CDX-187C; CX-04C (Cottrell Wit. Stat.) at Q&A 482-85.) In the above array, [ ] is the wordline between the SSL (string select line) and [ ] and [ ] is the wordline between the GSL (ground select line) and [ ]. In the parlance of claims 13 and 18, Dr. Cottrell testified that [ ] and [ ] are first wordlines, [ ] and [ ] are second wordlines, [ ] is the fourth voltage, and the third device is met by the select transistors immediately adjacent to the [ ] *i.e.*, GSL for [ ] and SSL for [ ] (CX-04C (Cottrell Wit. Stat.) at Q&A 226-227.)

As set forth above, the undersigned has determined that to satisfy element (d) of claims 13 and 18, the fourth voltage must satisfy the two specified equations. Respondents and the Staff

argue that only the accused Samsung 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products fail to satisfy the first equation– the "Off" equation. Because the undersigned agrees with Respondents and the Staff that the accused 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products do not satisfy the "Off" equation under Spansion's [ ] the undersigned need not consider whether the accused products satisfy the second equation - the "On" equation.

With regard to the "Off equation", *i.e.*, the requirement that the fourth voltage be "less than the sum of: (1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and (2) the second voltage," Dr Cottrell testified that this condition is met if [ ] is less than the threshold voltage of the memory cell on the unselected string that is coupled to the [ ] plus the channel voltage of the third device (*i.e.*, GSL or SSL).[7] (*Id.* at Q&A 228.) Dr. Cottrell testified that since the threshold voltage of flash memory cells can vary over a range of values from Vth,min. to Vth,max., it is sufficient for purposes of infringement that the above equation be met for the lowest value of that threshold voltage. (*Id.* at Q&A 229.) That is, Dr. Cottrell asserts that [ ] must be less than Vth,min. plus Vsel, where Vth,min. must take into account the body effect on the [ ] and Vsel is the channel voltage of the select transistor. (*Id.*)

[7] The "second voltage" in Claims 13 and 18 is explicitly defined as the voltage along the channel region of the third device. (*See* JX-01 at Claim 13 ("a second voltage along a channel region of a third device"), Claim 18("a third device with a second voltage along a channel region").)

Dr. Cottrell testified that the value of Vsel is determined by the voltage at the node between the [ ] and the select transistor. (*Id.* at Q&A 230.) According to Dr. Cottrell, the voltage at the node (*i.e.*, Vsel) will gradually increase until it will eventually exceed the value of [ ] minus Vth,min., thereby satisfying the above equation and causing the [ ] to turn off. (*Id.* at Q&A 229.)

Respondents dispute Dr. Cottrell's contention that the select transistor will have a voltage along its channel region. (RIB at 58-59.) Respondents argue that the second voltage along the channel region of the third device is zero (or very close thereto) making it impossible for Samsung's accused 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products to satisfy the "Off" equation. (*Id.*) Respondents also argue that the select transistor is not a "device" as that term is used in the claims. (*Id.* at 58.) Additionally, Respondents dispute Dr. Cottrell's determination of the threshold voltage of the fourth device. (*Id.* at 59-60.)

The Staff also argues that the voltage along the channel region of the third device is zero, or close thereto. (SIB at 49-50.) Thus, the Staff also concludes that Samsung's accused products cannot satisfy the "Off" equation. (*Id.* at 50.)

The undersigned finds that the "Off" equation in claims 13 and 18 requires the fourth voltage be "less than the sum of: (1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and (2) the second voltage." Spansion argues that when programming either the top or the bottom wordline in Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND Flash products, a voltage is applied to the adjacent [ ] that satisfies the "Off" equation. Thus,

under Spansion's [ ] infringement theory, the undersigned agrees that the fourth voltage is]. Also, the "second voltage" in Claims 13 and 18 is explicitly defined as the voltage along the channel region of the third device. (*See* JX-01 at Claim 13 ("a second voltage along a channel region of a third device"), Claim 18 ("a third device with a second voltage along a channel region").) Thus, under Spansion's infringement theory, the undersigned agrees that the third device is the select transistor (GSL or SSL) adjacent the [ ].[8] Accordingly, the undersigned agrees that the second voltage can be expressed as the voltage along the channel region of the select transistor, Vsel. Based on the above, the undersigned agrees that, under Spansion's infringement theory, the "Off" equation can be written as the following mathematical expression:

$$[\quad] < Vth + Vsel,$$

where [ ] is the voltage applied to the dummy wordline adjacent the wordline to be programmed, Vth is the threshold voltage of the fourth device, and Vsel is the voltage along the channel of the select transistor.

---

[8] Respondents argue that a select transistor is not a "device" as that term is used in the claims. (RX-2403C(Kynett, Wit. Stat.) at Q&A 120.) In support, Respondents rely on the testimony of their expert, Mr. Kynett, who stated that based on his understanding that the claims require the third device to be a memory cell, that "[t]he device that Dr. Cottrell selects is not a memory cell but is instead an ordinary transistor on the GSL or SSL line." (*Id.* at Q&A 125.)

Mr. Kynett's opinion is based on the faulty assumption that the claims require the third device to be a memory cell. However, when the claims intend for a device to be a memory cell (*i.e.*, floating gate transistor), the claims plainly indicate. For example, with regard to the first device and second device, the claims explicitly require "a first device to be programmed" and "a second device to be inhibited." (JX-1 at 8:35-37.) On the other hand, with regard to the third device, the claims merely require "a second voltage along the channel region of the third device," which could refer to either a floating gate transistor or select transistor. (*Id.* at 8:38-39; Cottrell, Tr. at 765:22-766:12; Kynett, Tr. at 2030:12-16.) Nothing in the specification or prosecution history mandates a different result. Thus, the undersigned finds Respondents' argument unpersuasive.

To determine whether Samsung's accused products satisfy the "Off" equation under Spansion's [ ] theory, values for the above variables [( ] Vth, Vsel) must be determined. The parties agree, with one exception noted below, on the value(s) for [ ] for each of the accused products as illustrated in the table below.

Samsung Accused Product		[ ] (volts)
42 nm MLC NAND		[ ]
42 nm 3-bit MLC NAND	top [ ] wordline	[ ]
	bottom [ ] wordline	[ ]
35 nm MLC NAND		[ ]
32 nm MLC NAND		[ ]
27 nm MLC NAND	top [ ] wordline	[ ]
	bottom [ ] wordline	[ ]

(RX-724SU, Ex. I.; RDX-210; CX-04CSU (Cottrell, Wit. Stat.) at Q&A 295, 355, 396, 405.)

With regard to the threshold voltage, Vth, both parties agree and the undersigned concurs that Vth must include the additional voltage on the fourth device due to body effects.[9] (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 353; RX-2403C (Kynett, Wit. Stat.) at Q&A 99.) Thus, the threshold voltage may be expressed as:

$$Vth = Vth,nom. + Vbe,$$

[9] During a programming operation the inhibited bitline is prevented from receiving any reference voltage applied to the bitline because the select transistors are turned off. CX-04CSU (Cottrell, Wit. Stat.) at Q&A 104.) When this happens, the source and drain have a voltage different than that of the substrate and well (*i.e.*, the body). (*Id.*) This causes the body effect, which results in an increase in the threshold voltage of a transistor. (*Id.* at 104-05.) The body effect only applies when the threshold voltage is involved in the calculation that turns the device on the inhibited bit line off. (*Id.* at Q&A 102.)

where Vth is the threshold value of the fourth device, Vth,nom. is the nominal erased threshold voltage of the fourth device, and Vbe is the voltage due to body effect. Spansion's expert Dr. Cottrell and Respondents' expert Mr. Kynett disagree over the proper Vth for the accused products. While Mr. Kynett appears to accept Dr. Cottrell's choice of [ ] volts as the nominal erased threshold voltage, Mr. Kynett disagrees with Dr. Cottrell's body effect calculations. (*See* RX-2403C (Kynett, Wit. Stat.) at Q&A 99, 127.) Specifically, Mr. Kynett argues that Dr. Cottrell grossly overestimates the body effect because he improperly characterizes Samsung's accused MLC NAND products as being long-channel devices. (*Id.* at Q&A 101.) Mr. Kynett asserts that the evidence shows that the accused MLC NAND products are short-channel devices that are built at minimum features sizes. (*Id.* at Q&A 100.)

Dr. Cottrell's analysis is persuasive. The evidence shows that Dr. Cottrell performed an extensive analysis of the physical characteristics of Samsung's MLC NAND products to determine exactly how much the body effect impacts the threshold voltage of cells on the inhibited bit string. (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 110, 129-37.) Dr. Cottrell also studied electron micrographs of Samsung's cells, analyzed Samsung's process flow, and studied specific doping concentrations for the accused chips. (*Id.* at Q&A 121, 123, 129-37.) From this information, Dr. Cottrell concluded that it would be inappropriate to characterize Samsung's accused MLC NAND products as short-channel devices. (*Id.* at Q&A 140.) Having concluded that it was inappropriate to characterize the accused products as short-channel devices, and thus appropriate to use the long-channel equations, Dr. Cottrell inputted the information he had

garnered from his analysis of the accused products into a standard textbook formula for determining body effect and calculated a final value. (*Id.* at Q&A 110, 129-37.)

In contrast to the extensive analysis Dr. Cottrell performed to determine how much the body effect impacts the threshold voltage in Samsung's accused MLC NAND products, Mr. Kynett testified that he "used body effect calculations from Dennard's seminal article on short channel body effects" to determine the proper body effect. (RX-2403C (Kynett, Wit. Stat.) at Q&A 100.) The Dennard article, however, was published more than 35 years ago and the results published therein are not based on a NAND flash, but rather a "switching transistor," which Dr. Cottrell testified is substantially different from Samsung's accused NAND products. (CX-1036; CX-04CSU (Cottrell, Wit. Stat.) at Q&A 154-157.) Accordingly, for the reasons discussed above, the undersigned finds Dr. Cottrell's analysis and calculations of the body effect persuasive and more reliable than Mr. Kynett's analysis. Therefore, the undersigned finds it appropriate to use Dr. Cottrell's body effect calculations for the accused products.

With regard to Mr. Kynett's contention that Dr. Cottrell should have considered short channel effects in his calculations of body effect, the undersigned in not persuaded. Mr. Kynett relies on the fact that Samsung's devices are small to conclude that they are subject to short channel effects. (RX-2403C (Kynett, Wit. Stat.) at Q&A 100.) However, Mr. Kynett admits that the width of the channel is but one factor to consider in determining whether a device is subject to short channel effects, and that other factors, such as the depth of source and drain diffusions, and doping concentrations must all be considered. (Kynett, Tr. at 2010:11-2011:6) Factors that

Dr. Cottrell considered, but that Mr. Kynett did not. (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 117-124; Kynett, Tr. at 2013:7-2014:14, 2063:3-2064:10.)

Thus, the undersigned finds the proper values for Vth for the accused MLC NAND products are as follows:

Samsung Accused Product	Vth (volts)
42 nm MLC NAND	[ ]
42 nm 3-bit MLC NAND	[ ]
35 nm MLC NAND	[ ]
32 nm MLC NAND	[ ]
27 nm MLC NAND	[ ]

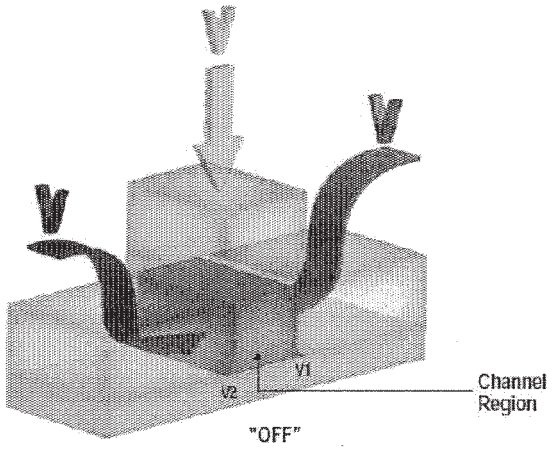
(CX-04CSU (Cottrell, Wit. Stat.) at Q&A 289, 294, 334, 374, 393, 409.)

With regard to the voltage along the channel of the select transistor, Vsel, Spansion argues that the value of Vsel is determined by the voltage at the node between the dummy cell and the select transistor. (*Id.* at Q&A 230.) As Dr. Cottrell testified with regard to the figure below, when a transistor is off, but has a voltage on its source and drain, the voltage will stop along the source side of the channel region (shown in red) and drain side of the channel region (shown in green). According to Dr. Cottrell, the voltage at the source side and the voltage at the drain side are "along the channel region." (*Id.* at Q&A 235, 237 ("the voltage at the node

[10] [

]

between the [ ] and the SSL transistor will appear on the drain of the SSL transistor, and therefore, along its channel region.").)



CX-04CSU (Cottrell, Wit. Stat.) at Q&A 235

Respondents and Staff argue that because the substrate in Samsung's accused MLC NAND products is tied to ground, when the select transistor is off, the voltage along the channel will be zero (or close thereto). (RIB at 59, SIB at 49-50.)

Spansion argues that the phrase "along the channel region" in claims 13 and 18 means the voltage at the node at the interface of the source and channel, or drain and channel. However, contrary to Spansion's argument, the undersigned finds that the '194 patent clearly describes the channel region as the region under the cell, between the source and the drain. (JX-1 at 3:1-3, Fig. 2.) Spansion attempts to justify its proposed construction arguing that its construction is in accordance with the plain and ordinary meaning of the word "along" as in "to walk along the shore." However, even if this were the proper construction, the undersigned finds that "along the shore" (where the shore in this instance is the path between the source and the drain) does not

mean, as Spansion suggests, to walk along either end of the shore. Moreover, the undersigned finds that Spansion's position contradicts itself. When a transistor is turned on, Spansion agrees that the channel region is the area under the cell between the source and drain, but when the same transistor is turned off Spansion argues that the channel region becomes the node at the interface of the source and channel (or drain and channel).

Spansion asserts that Respondents' expert Mr. Kynett agreed that the voltage on the source of the fourth device is the same voltage that is on the drain and along the channel region of the third device. (*See* CIB at 46.) However, Mr. Kynett's testimony was with regard to a third device that was turned on, not off, as is the present case. In Samsung's accused MLC products, the select transistor (*i.e.*, the third device) is turned off during programming. (CX-04CSU at Q&A 232, RX-2403C (Kynett, Wit. Stat.) at Q&A 121.) Thus, contrary to Spansion's assertion, the undersigned finds that Mr. Kynett never agreed that the drain or source node voltage is along the channel region of the third device or that the source and drain voltages are the same as the channel region under the third device when the third device is turned off.

Accordingly, the undersigned finds that when the select transistor (*i.e.*, the claimed third device") is turned off and substrate tied to ground, the voltage along the channel region of the select transistor (*i.e.*, Vsel) will be for all intents and purposes zero. (RX-2403C (Kynett, Wit. Stat.) at Q&A 121.)

Having determined the proper values for [ ] Vsel, and Vth for Samsung's accused 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products, it can now be determined whether the

accused products satisfy the "Off" equation in independent claims 13 and 18. The results of the "Off" equation for each of the accused products is shown in the chart below.

"Off" Equation [ ] < Vth + V2)		
42 nm MLC NAND		[ ]
42 nm 3-bit MLC NAND	top [ ] wordline	[ ]
	bottom [ ] wordline	[ ]
35 nm MLC NAND		[ ]
32 nm MLC NAND		[ ]
27 nm MLC NAND	top [ ] wordline	[ ]
	bottom [ ] wordline	[ ]

As can be readily seen in the above chart, none of Samsung's accused products satisfy the "Off" equation. Accordingly, the undersigned finds that Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products do not literally infringe claims 13 and 18.

2) Dependent claims 15-17 and 20-22

Because Samsung's 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products do not infringe independent claims 13 and 18, the undersigned also finds that Samsung's accused products do not literally infringe dependent claims 15-17 and 20-22 under Spansion's [ ] theory.

b. The Doctrine of Equivalents

Spansion argues that Samsung's accused MLC NAND 63 nm, 51 nm, 42 nm, 35 nm, 32 nm, and 27 nm products infringe the asserted claims under the doctrine of equivalents. (CIB at

47-51; CX-04CSU (Cottrell, Wit. Stat.) at Q&A 51.) Spansion argues that with the exception of the location of the fourth voltage, Samsung's MLC NAND Flash chips literally infringe every element of the '194 patent. (CIB at 47.) Specifically, Spansion argues that instead of applying a fourth voltage on the wordline next to the selected wordline, Samsung's MLC products apply a fourth voltage [ ] away from the selected wordline. (*Id.*) Spansion argues that application of the fourth voltage [ ] away infringes element (d) of claims 13 and 18 under the doctrine of equivalents because, functionally, there is an insubstantial difference. (*Id.*) To that end, Spansion's expert, Dr. Cottrell, testified that the programming method used in Samsung's MLC products performs substantially the same function (local boosting) in substantially the same way (apply cut off voltage to create a self boost string) to achieve substantially the same result (program inhibit).[11] (*Id.*; CX-04CSU (Cottrell, Wit. Stat.) at Q&A 201-207).

Respondents argue that its accused MLC NAND products do not infringe under the doctrine of equivalents. (RIB at 45-57.) In particular, Respondents argue that the all-elements-rule forecloses application of the doctrine of equivalents under Spansion's theory of infringement as a matter of law. (RIB at 46.) Respondents also argue that the differences between the claimed

[11] Dr. Cottrell also testified that some of Samsung's patents that cite the '194 patent are minor improvements on the invention disclosed in the '194 patent and the fact that those patents cite the '194 patent as "widely used" indicates that "the difference between Samsung's implementation of the modified local self-boosting and the preferred embodiment of the '194 patent is indeed insubstantial." (CX-04CSU at Q&A 206.) The undersigned finds this argument unpersuasive as Dr. Cottrell fails to link Samsung's accused MLC NAND products to the Samsung patents that cite the '194 patent as "widely used." Additionally, the undersigned disagrees with Dr. Cottrell that simply because some of Samsung's patents cite the '194 patent as widely used that this somehow indicates the difference between its products and the '194 patent is insubstantial. Moreover, equivalents are determined on a limitation-by-limitation basis, not on the basis of the invention as a whole.

invention and the accused products are not insubstantial. (*Id.* at 48.) Respondents argue that its purpose for applying [ ]1, *i.e.*, what Spansion asserts as the fourth voltage, [ ] away is entirely different from the purpose of applying the fourth voltage next to the selected wordline in the '194 patent. (*Id.* at 49.) Respondents also argue that Spansion improperly applies the function-way-result test in reaching its conclusion that the accused products infringe under the doctrine of equivalents. (Id. at 50.) Specifically, Respondents argue that Spansion does not apply the function-way-result test on an element-by-element basis, but rather improperly focuses on the [ ] scheme used in the accused products as a whole. (*Id.*) Additionally, Respondents argue that Spansion's ascribed function is overbroad, that its "way" analysis is flawed, and that it mischaracterizes the result. (*Id.* at 50-54.) Moreover, Respondents argue that [ ] Spansion's asserted fourth voltage, will not satisfy the "Off" equation in claims 13 and 18 for the accused MLC NAND products. (*Id.* at 54-57.)

The Staff argues that Spansion has failed to prove that Samsung's accused MLC NAND products infringe the asserted claims of the '194 patent under the doctrine of equivalents. (SIB at 50-54.) The Staff argues that a finding of equivalence under Spansion's infringement theory would render the claim term "adjacent" meaningless. (*Id.* at 52.) The Staff also argues that Spansion cannot show that the differences between the accused MLC NAND products and the claimed invention are insubstantial. (*Id.*) In particular, the Staff argues that because Spansion chose the wrong function for its analysis, Spansion has failed to show that the accused products perform the claimed function in substantially the same way as the claimed invention. (*Id.* at 53-54.)

For the reasons discussed in detail below, the undersigned finds that Spansion has failed to prove that Samsung's 63 nm, 51 nm, 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND products infringe the asserted claims of the '194 patent under the doctrine of equivalents.

To prove infringement under the doctrine of equivalents, Spansion must show that the differences between Samsung's accused MLC NAND products and the claimed invention are insubstantial. *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1376-77 (Fed. Cir. 2008). Here, Spansion argues that the only difference between the accused products and the claimed invention of the '194 patent is that the fourth voltage, [ ] is not "adjacent," the first wordline, but rather [ ] away from the first wordline. The term "adjacent" has been construed to mean "next to" so that a finding of equivalence in this instance would be a finding that the fourth voltage next to the first wordline is the same as the fourth voltage not next to the first wordline. Thus, to adopt Spansion's argument would be to render the term "adjacent" in claims 13 and 18 meaningless-- a result that would be incorrect as a matter of law. *See Warner-Jenkinson Co. v. Hilton Davis Chemical*, 520 U.S. 17, 39 n.8 (U.S. 1997); *PSN Illinois, LLC v. Ivoclar Vivadent, Inc.*, 525 F.3d 1159, 1168 (Fed. Cir. 2008).

Moreover, the undersigned finds that Spansion has failed to prove that the differences between applying the fourth voltage adjacent the first wordline as claimed and applying the fourth voltage [ ] away as in Samsung's MLC NAND products are insubstantial. While Dr. Cottrell argues that the differences are insubstantial because applying the fourth voltage [ ] away from the first wordline accomplishes substantially the same function, *i.e.*, localizing the self-boosting effect, in substantially the same way, *i.e.*, by applying a

voltage lower than Vpass to a wordline near the selected wordline, to achieve substantially the same result, *i.e.*, mitigating program disturb, as applying the fourth voltage next to the first wordline, his characterization of the function, way and result implies that he improperly compared the programming method in Samsung's accused MLC NAND products as a whole to the one disclosed in the '194 patent. In so doing, Dr. Cottrell choose the wrong function, which taints his entire analysis.

The law is clear that to demonstrate equivalence, Spansion must show "on a limitation-by-limitation basis that the accused product performs substantially the same function in substantially the same way with substantially the same result as each claim limitation of the patented product." *Wavetronix LLC v. EIS Elec. Integrated Sys.*, 573 f.3d 1343, 1360 (Fed. Cir. 2009.) In characterizing the proper function "[t]he operative definition for purposes of equivalency analysis is the intended function as seen in the context of the patent, the prosecution history, and the prior art." *Genentech Inc. v. Wellcome Found*, 29 F.3d 1555, 1567 (Fed. Cir. 1994). Spansion defines the function as "localizing the self-boosting effect to the vicinity of the cell subject to program disturb." (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 201.) Yet Spansion points to nothing in the claims, specification or prosecution history that supports such a definition. In fact, the '194 patent never uses the terms "localizing," "boosting, "self-boosting," or "local self-boosting." Spansion argues that the fact that the specification of the '194 patent does not describe the function of "localizing" has no bearing on whether Dr. Cottrell's asserted function is correct. (CRB at 30 n. 16.) More particularly, Spansion argues that "a patent's

silence as to the function, way, or result of a particular limitation ... simply means that testimony of the ordinary skilled artisan should be considered." (*Id.*)

Spansion's argument is not persuasive. Contrary to Spansion's argument, the '194 patent does discuss the function of the claimed "fourth voltage" provided on the "second wordline adjacent the first wordline." Specifically, the specification of the '194 patent teaches that the function of providing the fourth voltage to the second wordline adjacent the first wordline is to electrically isolate the first wordline, and by extension, the second device to be program inhibited. (*See* JX-01 at 2:10-11 (stating that the invention requires "electrically isolating the second device"), 4:35-37 ("Isolation of the programming wordline 100F" can be accomplished by applying zero volts to the adjacent wordlines 100E" and 100G"."), 4:38-41 ("[I]solation facilitates the program inhibit of floating gate devices ... by allowing the voltage in its channel region ... to be raised high enough to inhibit programming."), Fig. 4, Fig. 5, Fig. 8.) In fact, Dr. Cottrell admitted at the hearing that the '194 patent specification only describes isolation. (Cottrell, Tr. at 629:8-18, 823:2-13.) Because the intrinsic evidence discloses the proper function, relying on inherently biased expert testimony to the contrary, as Spansion suggests, would be in error. Therefore, the undersigned finds that properly characterized, the function of the fourth voltage on the second wordline adjacent the first wordline is to electrically isolate the first wordline, and by extension, the second device to be program inhibited. In Samsung's accused products, however, the evidence shows that the function of [ ] which Dr. Cottrell asserts as the fourth voltage under his doctrine of equivalents theory, is not to isolate the programmed wordline, but rather to [ ] in order to mitigate program disturbs.

(Lim, Tr. at 1824:15-22 ("We saw that, on account of program disturb, those differences can emanate in a [ ] rather, and as such we sought to provide a [ ] so as to be able to retard the [ ]"); RX-2403C (Kynett, Wit. Stat.) at Q&A 68; RX-125C (Lim, Wit. Stat.) at Q&A 32-33; RX-2173 at Q&A 10.) Because[ ] does not perform substantially the same function as the claimed fourth voltage on the second wordline the undersigned finds that Spansion has failed to prove that the difference between applying the fourth voltage adjacent the first wordline and applying the fourth voltage [ ] from the first wordline are insubstantial. Accordingly, the undersigned finds that Spansion has failed to prove that Samsung's accused MLC NAND products infringe the asserted claims of the '194 patent under the doctrine of equivalents.

2. OneNAND / Flex-OneNAND

a. Claims 13 and 18

Dr. Cottrell testified in detail for Spansion that Samsung's 42 nm OneNAND, 51 nm OneNAND and 42 nm Flex-OneNAND products[12] ("the accused OneNAND products") satisfy all of the limitations of claims 13 and 18 of the '194 patent. (CX-04C (Cottrell Wit. Stat.) at Q&A 50, 272-278, 305-08, 310-314, 315.) Accordingly, Dr. Cottrell concluded that the accused OneNAND products literally infringe claims 13 and 18.

[12] Spansion only accuses Samsung 42 nm Flex-OneNAND products when programmed in an SLC partition. (CIB at 51 n. 16.)

Respondents argue that the accused OneNAND products do not infringe claims 13 and 18. (RIB at 60-63.) Respondents argue that the voltage, [ ] which Spansion alleges meets all the requirements of the claimed fourth voltage, is designed to avoid inadvertent programming on adjacent wordlines, not the selected wordline.[13] (RIB at 60.) Respondents assert that the [ ]threshold voltages used by Samsung in the accused OneNAND products mean that the accused products cannot at once satisfy the "On" and "Off" equations in claims 13 and 18 of the '194 patent. (*Id.*)

The Staff, like Spansion, argues that the accused OneNAND products infringe claims 13 and 18 of the '194 patent. (SIB at 54-55.) Specifically, the Staff argues that the deposition testimony of a Samsung engineer, Samsung discovery responses, and internal Samsung documents confirm that the accused OneNAND products utilize a programming scheme that places a voltage, [ ] on the wordlines adjacent the selected wordline that satisfies all the requirements of the "fourth voltage." (*Id.*)

For the reasons discussed in detail below, the undersigned finds that Samsung's accused 42 nm OneNAND, 42 nm Flex-OneNAND, and 51 nm OneNAND products meet all the limitations of independent claims 13 and 18 of the'194 patent and therefore literally infringe.

1) 42 nm OneNAND / 42 nm Flex-OneNAND

Respondents challenge Dr. Cottrell's opinion that the 42 nm OneNAND and 42 nm Flex-OneNAND products literally infringe, arguing that Samsung's 42 nm OneNAND and 42 nm

---

[13] Patent infringement is a strict liability offense. Thus, Samsung's subjective reasoning for using [ ] is irrelevant. *See In re Seagate Tech, LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (en banc).

Flex-OneNAND products do not satisfy the "Off" equation in claims 13 and 18 when the proper body effect and nominal erase voltages are considered. As previously discussed, the "Off" equation requires that the fourth voltage be "less than the sum of: (1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and (2) the second voltage." Spansion argues that when programming Samsung's 42 nm OneNAND and 42 nm Flex-OneNAND products, a voltage, [ ], is applied to the wordlines adjacent the selected wordline (*i.e.*, the "first wordline") that satisfies the "Off" equation. (*See* CX-04C (Cottrell Wit. Stat.) at Q&A 305, 308, 311, 314.) Thus, under Spansion's infringement theory, the "fourth voltage" is [.] Accordingly, the undersigned agrees with Spansion that the "Off" equation can be written as the following mathematical expression:

$$[\quad] < Vth + V2,$$

where [ ] is the asserted "fourth voltage," Vth is the threshold voltage of the fourth device, and V2 is the "second voltage."[14] Additionally, both parties agree that Vth must include the additional voltage on the fourth device due to body effects. Thus, the threshold voltage may be expressed as:

$$Vth = Vth,nom. + Vbe,$$

where Vth is the threshold value of the fourth device, Vth, nom. is the nominal threshold voltage of the fourth device, and Vbe is the voltage due to body effect.

---

[14] Dr. Cottrell refers to the "second voltage" (*i.e.*, the voltage along the channel region of the third device) as Vsb. (CX-04C (Cottrell, Wit. Stat.) at Q&A 209.)

With regard to [ ] the parties agree, and the undersigned concurs, that for Samsung's 42 nm OneNAND products, the value ranges from [ ] volts and for Samsung's 42 nm Flex-OneNAND products from [ ] (*See* CX-1806C, Ex. B (showing that the voltage on WL-1 (*i.e.*, VPSDN) is equal to [ ] for 42 nm One-NAND products and [ ] for 42 nm Flex-OneNAND products, where VT ranges from [ ]); CX-353SU (Kim, Dep.) at 85:12-16.) For Spansion, Dr. Cottrell uses [ ] as the value for [ ] for the 42 nm OneNAND products and[ ] volts as the value for [ ] for the 42 nm Flex-OneNAND products. For Respondents, Mr. Kynett uses [ ] for the 42 nm OneNAND products and [ ] for the 42 nm Flex-OneNAND products. As the party with the burden of proving infringement, Dr. Cottrell need not show infringement over the entire range of possible [ ] voltages. The patent statute makes clear that <u>any</u> unauthorized use of a patented invention is an infringement. 35 U.S.C. § 271(a); *Embrex, Inc. v. Service Engineering Corp.*, 216 F.3d 1343, 1353 (Fed. Cir. 2000) ("Since its inception, this court has not tolerated the notion that a little infringement-de minimis infringement-is acceptable infringement or not infringement at all. The statute states directly that any unauthorized use of a patented invention is an infringement. Thus, the statute leaves no leeway to excuse infringement because the infringer only infringed a little.") (internal citation omitted). Thus, the undersigned finds it is perfectly acceptable that Dr. Cottrell chose the lowest values in the ranges for his infringement analysis.

With regard to Vth, Dr. Cottrell and Mr. Kynett disagree on the proper values for Vth,nom. and Vbe. While Dr. Cottrell argues that the proper value for Vth, nom. is [ ] Mr. Kynett argues that the proper value is [ ] Unlike Dr. Cottrell, however, who bases his

opinion on the graphs of erased threshold voltage distributions that Samsung produced in this investigation, Mr. Kynett bases his opinion on the unreliable testimony of Dr. Kang who stated that he "generally believed" that the lower end of the erased threshold distribution would be -4 to -5 volts, but that "[t]here would not be any such data to substantiate that" and a single voltage distribution curve from Samsung's forthcoming 27 nm device, that does not purport to apply to any other Samsung products. (*See* CX-04CSU (Cottrell, Wit. Stat.) at Q&A 93-96; CX-2324, CX-2399, CX-2441; RX-2403C (Kynett, Wit. Stat.) at Q&A 98; CX-348SU (Kang, Dep.) at 410:25-413:13; RX-1342C.) Thus, the undersigned finds Dr. Cottrell's choice of [ ] as Vth, nom. to be more reliable than the [ ] chosen by Mr. Kynett. As for the voltage due to the body effect, for the reasons discussed in detail with regard to Spansion's dummy wordline theory, the undersigned finds Dr. Cottrell's calculations of the body effect persuasive. Accordingly, the undersigned adopts Dr. Cottrell's value of [ ] as the proper Vth for Samsung's accused 42 nm OneNAND and 42 nm Flex-OneNand products.[ ]

With regard to V2, Dr. Cottrell testifies that the proper value is [ ] for the 42 nm OneNAND products and [ ] for the 42 nm Flex-OneNAND products. Respondents do not contest these figures and thus have waived the right to do so under Ground Rule 11.1. (*See* RIB at 60-64; *see also* Order No. 2 (Ground Rules).) Accordingly, the undersigned adopts Dr. Cottrell's values for the second voltage.

---

[15] [

]

Having determined the proper values for [ ] Vth, and V2, the "Off" equation can now be expressed for Samsung's accused 42 nm OneNAND and 42 nm Flex-OneNAND products as shown in the chart below.

"Off" Equation (VPSDN < Vth + V2)	
42 nm OneNAND	[ ]
42 nm Flex-OneNAND	[ ]

As can be readily observed from the chart above, [ ]satisfies the "Off" equation for the accused 42 nm OneNAND and 42 nm Flex-OneNAND products. Accordingly, the undersigned finds that Spansion has proven by a preponderance of the evidence that Samsung's 42 nm OneNAND and 42 nm Flex-OneNAND products literally infringe independent claims 13 and 18 of the '194 patent.

2) 51 nm OneNAND

Respondents challenge Dr. Cottrell's opinion that Samsung's 51 nm OneNAND products literally infringe, arguing that application of [ ] on the wordlines adjacent the selected wordline will not satisfy the "On" equation of claims 13 and 18 of the '194 patent once the proper maximum threshold voltage is considered. (*Id.* at 63.) The "On" equation requires that the fourth voltage be "greater than the sum of: (1) a threshold voltage of the fifth device adjacent to the first device, and (2) the third voltage." Spansion argues that when programming Samsung's 51 nm OneNAND products, a voltage, [ ] is applied to the wordlines adjacent the selected wordline (*i.e.*, the "first wordline") that satisfies the "On" equation. (*See* CX-04C (Cottrell Wit. Stat.) at Q&A 273, 277.) Thus, under Spansion's infringement theory, the "fourth

voltage" is [ ] Additionally, all parties agree, as does the undersigned, that the claimed "third voltage" is [ ] (*See* CX-04C (Cottrell Wit. Stat.) at Q&A 185; RX 2403C (Kynett, Wit. Stat.) at Q&A 131, 134.) Accordingly, the "On" equation can be written as the following mathematical expression:

[ ]> Vth,

where [ ] is the asserted "fourth voltage" and Vth is the threshold voltage of the fifth device.

With regard to [ ] for Samsung's 51 nm OneNAND products, the value ranges from [ ] (*See* CX-1806C, Ex. B (showing that the voltage [ ] for 51 nm One-NAND products, where VT ranges from [ ] Dr. Cottrell uses a value for [ ] volts for his analysis, while Mr. Kynett uses a value of [ ] Respondents argue that by selecting a [ ] at the upper end of the range, Dr. Cottrell is selecting the [ ] that is the best case for him to show the "On" equation satisfied. (RIB at 63.) However, as previously discussed, as the party with the burden of proving infringement, Dr. Cottrell need not show infringement over the entire range of possible [ ] voltages. Under the patent statute, Dr. Cottrell need only show by a preponderance of the evidence a single unauthorized use of the patented invention. 35 U.S.C. § 271(a). Thus, the undersigned finds it is perfectly acceptable that Dr. Cottrell chose the uppermost value, [ ], in the range for his infringement analysis.

With regard to Vth, the evidence shows that the threshold voltage associated with the programmed state in Samsung's 51 nm OneNAND products ranges from [ ] (CX-

353 at 100:11 - 101:2.) Respondents argue that even accepting Dr. Cottrell's choice of [ ] Spansion cannot show the "On" equation satisfied over the range of positive threshold voltages. (RIB at 63.) However, there is no requirement that Spansion must show infringement over the entire range of threshold voltages. Spansion need only show by a preponderance of the evidence a single infringing act. 35 U.S.C. § 271(a). Here, Dr. Cottrell chooses [ ] which represents approximately 94% of the cells in a single device. (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 277, 282.) Thus, the undersigned finds Respondents argument unpersuasive and adopts Dr. Cottrell's value of Vth as [ ]

Having determined the proper values for [ ] and Vth, the "On" equation can now be expressed for Samsung's accused 51 nm OneNAND products as shown in the chart below.

"On" Equation [ ]	
51 nm OneNAND	[ ]

As can be readily observed from the chart above, VPSDN satisfies the "On" equation for the accused 51 nm OneNAND products. Accordingly, the undersigned finds that Spansion has proven by a preponderance of the evidence that Samsung's 51nm OneNAND products literally infringe independent claims 13 and 18 of the '194 patent.

b. Dependent claims 15-17 and 20-22

Dependent claims 15 and 20 require that the "fourth voltage is provided to a plurality of wordlines." Here, the evidence shows that when programming Samsung's accused 42 nm OneNAND, 42 nm Flex-OneNAND, and 51 nm OneNAND products, the voltage, VPSDN, is applied to the wordlines adjacent above the selected wordline and adjacent below the selected

wordline. (CX-04CSU (Cottrell, Wit. Stat.) at Q&A 278, 315.) Thus, the fourth voltage is provided to a plurality of wordlines and the undersigned finds that Samsung's accused OneNAND products literally infringe dependent claims 15 and 20. The undersigned has held that dependent clams 16-17 and 21-22 do not further limit independent claims 13 and 18. (*See* Order No. 34.) Accordingly, the undersigned finds that dependent claims 16-17 and 21-22 are also literally infringed.

C. Invalidity

Respondents argue that the asserted claims of the '194 patent are invalid as anticipated by United States Patent No. 5,621,684 ("the Jung Patent") and an article titled, "A 3.3V 128Mb Multi-Level NAND Flash Memory for Mass Storage Applications" written by Tae-Sung Jung ("Jung Article"). (RIB at 64, 75-76.) Respondents also argue that the asserted claims are obvious in light of the Jung Article in view of United States Provisional Application No. 60/007063 filed by Lancaster and Hirose ("the Hirose Application"). (*Id.* at 75-76.)

1. Level of Ordinary Skill in the Art

The undersigned determined in Order No 34 that the level of ordinary skill in the art for the '194 patent is an individual with at least a bachelor's degree in electrical engineering, or an equivalent field, and about two years of experience in memory design. (Order No. 34 at 6.)

2. Anticipation

a. Jung Patent

Respondents argue that the Jung Patent anticipates the asserted claims of the '194 patent. (*Id.* at 64-75.) To that end, Respondents' expert, Dr. Pashley testified in detail that the Jung

Patent meets each of the limitations of independent claims 13 and 18, as well as, the limitations of dependent claims 15, 16, 17, 20, 21, and 22. (RX-124C (Pashley, Wit. Stat.) at Q&A 85, 92-121; Pashley Tr. 2321-39; RDX-53; RDX-54; RDX-349.)

Spansion argues that the Jung Patent does not anticipate. (CIB at 62-69.) In particular, Spansion argues the Jung Patent is missing key elements of the claims, including the programmed threshold voltage, the erased threshold voltage, and the second voltage. (*Id.* at 63.) Spansion also argues that the Jung Patent does not disclose the "On" equation. (*Id.* at 69.) With regard to the programmed and erased threshold voltages, Spansion argues that the Jung Patent does not disclose both a target threshold, as well as, a range of values around that threshold voltage that would cause the claim limitations to be met for most cells. (*Id.* at 64-68.) With regard to the second voltage, Spansion argues that Vcc, a value used to calculate the second voltage, is not disclosed in the Jung Patent. (*Id.* at 68-69.)

Like Respondents, the Staff also argues that the Jung Patent anticipates all of the asserted claims. (SIB at 56-63.)

The Jung Patent, titled "Nonvolatile Semiconductor Member with Different Pass Potential Applied to the First Two Adjacent Word[lines]," issued to Tae-Sung Jung on April 15, 1997 from an application filed in the United States on March 29, 1996. (See RX-86, cover page.) As such, the Jung Patent has an effective filing date of March 29, 1996, which is before the July 24, 1996 effective filing date of the '194 patent. Accordingly, the Jung Patent is prior art under 35 U.S.C. § 102(e). 35 U.S.C. § 102(e). The Jung Patent was not disclosed to the Patent Office and was not considered during the examination of the '194 patent. (*See* JX-04.)

As described in detail below, the undersigned finds that the Jung Patent discloses each and every limitation of the asserted claims and therefore anticipates claims 13, 15-17, 18, and 20-22 of the '194 patent.

1) Claims 13 and 18

a) The preambles

The preamble of claim 13 recites: "A method of programming in a Flash memory." The preamble of claim 18 recites: "A Flash memory system." The undersigned held in Order No. 34 that the preambles do not limit the claims. (*See* Order 34 at 67.) Notwithstanding, the preambles are expressly disclosed in the Jung Patent. (*See* RX-86 at 1:10-14 ("the present invention relates to ... a method and apparatus for programming nonvolatile semiconductor memories with NAND structured cells."); RX-124C (Pashley, Wit. Stat.) at Q&A 92.)

b) The first step and element

The first step of the claim 13 method requires: "(a) providing a first voltage to a first wordline, the first wordline being coupled to a first device to be programmed, the first wordline also being coupled to a second device to be program inhibited." Claim 18 imposes the same limitations. (*See* JX-1, 8:63-65.) Spansion does not dispute that this limitation is met. Regardless, the Jung Patent expressly discloses the limitation. (RX-124C (Pashley, Wit. Stat.) at Q&A 93.) For example, as shown in Figure 5, Vpgm (short for Vprogram) is applied to wordline WL2, where transistor M22-M2n is to be programmed, and M21 is to be inhibited. (RX-86 at 7:34-39, Fig. 5.) Thus, Vpgm is the "first voltage" provided to "a first wordline," WL2 is the "first wordline ... coupled to a first device to be programmed" and "the first wordline ... coupled

to a second device to be program inhibited," M22 is an example of "a first device to be programmed," and M21 is "a second device to be program inhibited." (RX-124C (Pashley, Wit. Stat.) at Q&A 93.)

c) The second step and limitation

The second step of method claim 13 requires: "(b) providing a second voltage along a channel region of a third device." Claim 18 imposes the same limitation. (*See* JX-01 at 8:66-67.) Spansion does not dispute that this limitation is met. Regardless, the Jung Patent expressly discloses this step and limitation exactly as set forth in the '194 patent. (RX-124C (Pashley, Wit. Stat.) at Q&A 94.) For example, as shown in Figure 5, if M21 is the transistor to be inhibited, and M22 is to be programmed, the third device can be, among other possibilities, M41. (RX-86 at 8:4-48, Fig. 5; RDX-393.) This third device, M41, will have a voltage along a channel region which will be the second voltage of the claims. (*Id.*; RX-124C (Pashley, Wit. Stat.) at Q&A 94.)

d) The third step and limitation

The third step of the method of claim 13 requires "(c) providing a third voltage to a bitline coupled with the first device." Claim 18 imposes the same limitation. (JX-01 at 9:1-2.) Spansion does not dispute that this limitation is met. Regardless, the Jung Patent discloses the limitation. (RX-124C (Pashley, Wit. Stat.) at Q&A 96.) In particular, the Jung Patent teaches that in order to permit programming, zero volts is applied to the bitline (*e.g.*, BL2) of the transistor to be programmed (*e.g.*, M22). Thus, the "third voltage" is zero volts. (RX-86, 7:36-47 ("Meanwhile, the remaining memory transistors M22~M2n in the cell unit must be

changed into data different from the erased data, for example, data "0." ... [D]ata latches connected to selected bitlines BL2~BLn provide ground potential corresponding to data "0" on the bitlines BL2~BLn."); RX-124C (Pashley, Wit. Stat.) at Q&A 96.)

e) The fourth step and limitation

The fourth and final step of Claim 13 calls for:

> (d) providing a fourth voltage to a second wordline adjacent to the first wordline, such that
>
> (i) the fourth voltage is less than the sum of (1) a threshold voltage of a fourth device adjacent to the second device, the fourth device being located between the second device and the third device, and (2) the second voltage, and
>
> (ii) the fourth voltage is also greater than the sum of (1) a threshold voltage of a fifth device adjacent to the first device; and (2) the third voltage

(JX-1 at 8:42-53.) Claim 18 places the same restraints on the "fourth voltage." (*Id.* at 9:3-10:3.)

The Jung Patent states:

> [T]he present invention has a characteristic feature that the programming potential Vpgm is applied to the selected word line WL2 after a second pass potential Vpass2 lower than the first pass potential Vpass1, is applied to wordlines WL1 and WL3 adjacent to the selected wordline WL2 during programming.

(RX-86 at 7:19-25.) Thus, the Jung Patent teaches that when WL2 (the "first wordline") is selected for programming, Vpass2 (the "fourth voltage") is applied to adjacent wordlines WL1 and WL3 (each a "second wordline"). (*Id.* at 7:19-25, Fig. 5; RX-124C (Pashley, Wit. Stat.) at Q&A 97.)

(1) "Off" equation

The Jung Patent not only explicitly describes the "Off" equation, but also provides the necessary numerical values to show that in the disclosed embodiments the fourth voltage, Vpass2, is less than the sum of the threshold voltage of the fourth device, Vth4, and the second voltage, V2.

The fourth device is identified in claims 13 and 18 of the '194 patent as adjacent to the second device and located between the second device and the third device. (JX-01 at 8:44-48.) As seen in Figure 5 of the Jung Patent, M31 and M11 meet these requirements. (RX-86, Fig. 5; RX-124C (Pashley, Wit. Stat.) at Q&A 97-98; RDX-393.)

The undersigned found in Order No 34 that a fourth voltage that satisfies the relationship expressed in element (d)(i) of claim 13, *i.e.*, a fourth voltage less than the sum of the threshold voltage of the fourth device plus the second voltage, ensures the fourth device is turned off. (Order No. 34 at 79-83.) The Jung Patent teaches exactly the same thing. In particular, the Jung Patent discloses that:

> [S]econd pass potential Vpass2, lower than a first pass potential Vpass1, is applied to wordlines WL1 and WL3 adjacent to the selected wordline WL2 during programming. . . . The application of these potentials causes first and second memory transistors, adjacent to the selected memory transistors, which have to maintain erased data, to be turned off.

(RX-86 at 7:20-30, Abstract.). As quoted above, the Jung Patent teaches choosing fourth voltage values, *i.e.*, Vpass2 values, that will turn off the fourth devices, *i.e.*, "first and second memory transistors," adjacent to the transistors selected to be inhibited, *i.e.*, those transistors that must

"maintain erased data." (RX-124C (Pashley, Wit. Stat.) at Q&A 99-102.) Thus, the undersigned finds the Jung Patent aptly teaches the "Off" equation.

Moreover, the preferred embodiment of the Jung Patent independently shows this to be the case. (RX-124C (Pashley, Wit. Stat.) at Q&A 115-116.) Values for Vpass2 are disclosed as including about 2 volts when using a Vpgm of about 18 volts.[16] (RX-86 at 9:19-20.) The erase threshold is disclosed as -3 volts and the programmed threshold is disclosed as +1 volts. (*Id.* at 9:29, 4:13.) With regard to the second voltage, if the fourth device is in a programmed state, the Jung Patent teaches that the second voltage, *i.e.*, the voltage along the channel region of the third device (M41 in Figure 5), is at least r*Vpass1, where r is 0.6 and Vpass1 is 6 to 9.5 volts. (*Id.* at 8:16-18, 9:21, 9:30-32; RX-124C (Pashley, Wit. Stat.) at Q&A 94.) Thus, the values for the second voltage when the fourth device is in its programmed state are from 3.6 volts to 5.7 volts. (RX-124C (Pashley, Wit. Stat.) at Q&A 94.) If the fourth device is in its erased state, the Jung Patent teaches that the second voltage is Vcc - Vt + r*vPass1. (RX-86 at 9:20-32; RX-124C (Pashley, Wit. Stat.) at Q&A 94.) Thus, the values for the second voltage when the fourth device is in its erased state are from 5.9 volts to 8 volts. (RX-124C (Pashley, Wit. Stat.) at Q&A 94.) Accordingly, the "Off" equation can be solved directly as seen in the chart below.

"Off" equation (fourth voltage < Vth4[17] + second voltage)

[16] These values are disclosed in the specification as exemplary values used to demonstrate the various embodiments of the invention. (RX-86 at 9:20-22 ("Vpass2 of about 2 volts, a programming potential Vpgm of about 18 volts ... are used according to the present invention.").)

[17] The threshold voltage on the fourth device is subject to body effects, which increase the overall erased threshold voltage, such that Vth4 = Vth4,nom. + Vbe, where Vth4,nom. is the nominal threshold voltage and Vbe is the voltage due to body effects. The addition of Vbe makes it easier to satisfy the "Off" (continued...)

Vth4(programmed) = +1 volts	Vth4(erased) = -3 volt
2 volts < +1 volt + 3.6 volts	2 volts < -3 volts + 5.9 volts
2 volts < 4.6 volts	2 volts < 2.9 volts

Thus, as can be plainly seen in the chart above, the Jung Patent explicitly discloses a preferred embodiment that satisfies the "Off" equation.

(2) "On" equation

The Jung Patent explicitly describes the "On" equation and provides the necessary numerical values to show that in the disclosed embodiments the fourth voltage, Vpass2, is greater than the sum of the threshold voltage of the fifth device, Vth5, and the third voltage, V3. The fifth device is identified in claims 13 and 18 of the '194 patent as adjacent to the first device. (JX-01 at 8:51-52.) As seen in Figure 5 of the Jung Patent, the fifth device can be M12, which is adjacent to M22, the first device. (RX-86, Fig. 5; RX-124C (Pashley, Wit. Stat.) at Q&A 103, Pashley, Tr. at 2358:7-13.)

The undersigned found in Order No 34 that a fourth voltage that satisfies the relationship expressed in element (d)(ii) of claim 13, *i.e.*, a fourth voltage greater than the sum of the threshold voltage of the fifth device plus the third voltage, ensures the fifth device is turned on. (Order No. 34 at 82.) The Jung Patent teaches the same thing. In particular, the Jung Patent discloses that :

---

[17](...continued)
equation, because the body effect increases the nominal threshold voltage, which in turn makes the right side of the "Off" equation bigger. Because the nominal threshold voltage disclosed in the Jung Patent is sufficient to satisfy the "Off" equation the additional voltage due to body effect need not be considered.

> application of the first and second pass potentials Vpass1 and Vpass2 causes the drains, sources, and channels of memory transistors, which are connected to selected bit lines BL2-BLn in the selected row block, to go to the ground potential.

(RX-86 at 7:66-8:3.) As quoted above, the Jung Patent teaches applying fourth voltage values, *i.e.*, Vpass2 values, that must turn on the transistors on the selected bitline, *i.e.*, the fifth devices, because otherwise ground potential, zero volts, could not reach the transistor to be programmed, *i.e.*, the first device. (RX-124C (Pashley, Wit. Stat.) at Q&A 106.) In fact, Spansion's expert, Dr. Orlowski, admitted that this must be the case. (*See* RX-115C (Orlowski, Dep.) at 144:15-146:5 (stating that devices on the selected bitline above the selected cell must be on), 148:11-23.) Thus, as shown in Figure 5, the Jung Patent discloses that on the selected bitline BL2, device M12 must be on to permit ground to flow through to selected device M22. (RX-86, Fig. 5; RX-124C (Pashley, Wit. Stat.) at Q&A 106-109.) Moreover, the Jung Patent expressly discloses in the claims that the fourth voltage is greater than the threshold voltage of the fifth device. (*See* RX-86 at 11:33-36 ("wherein said second pass potential [Vpass2] has a potential value higher than a threshold voltage corresponding to programming data different from said erased data."), 12:41-44.) Accordingly, the undersigned finds that the Jung Patent teaches the "On" equation.

The preferred embodiment of the Jung Patent also independently shows this to be the case. (RX-124C (Pashley, Wit. Stat.) at Q&A 119.) Values for Vpass2 are disclosed as including about 2 volts when using a Vpgm of about 18 volts. (*Id.* at 9:19-20.) The erase threshold is disclosed as -3 volts and the programmed threshold is disclosed as +1 volts. (*Id.* at

9:29, 4:13.) Accordingly, with a third voltage of zero volts, the "On" equation can be solved directly as seen in the chart below.

"On" equation (fourth voltage > Vth5 + third voltage)	
Vth5(programmed) = -3 volts	Vth5(erased)[18] = +1 volt
2 volts > -3 volts + 0 volts	2 volts > 1 volt + 0 volts
2 volts > -3 volts	2 volts > +1 volts

Thus, as can be plainly seen in the chart above, the Jung Patent explicitly discloses a preferred embodiment that satisfies the "On" equation.

With regard to Spansion's argument that the Jung Patent does not disclose both target threshold voltages, as well as, a range of values around the target threshold voltages that would cause the claim limitations to be met for most cells, the undersigned is not persuaded. The undersigned construed the term "threshold voltage" in Order No. 34 to mean "threshold voltage of a ... device, whether programmed or erased." (Order No. 34 at 73.) Nowhere in that construction is the requirement that the threshold voltages must include a range of values that would cause the claim limitations to be met for most cells. Spansion points to the fact that the undersigned stated that "the '194 patent describes the threshold voltage recited in the asserted independent claims as a 'target' threshold voltage with a range around that target that includes most, but not all, of the devices in the memory array" as support for its argument. However, it is clear from a reading of the entire section that the above sentence was only meant to rebut Respondents' argument that the threshold voltage should be construed to cover all relevant

[18] There is no body effect on the fifth device, because the source voltage on the fifth device is at ground potential. (RX-124C (Pashley, Wit. Stat.) at Q&A 120.)

ranges of target threshold voltages. (Order No. 34 at 73 "However, even if it could be interpreted as such, Respondents' argument is directly contradicted by the '194 patent. Specifically, the '194 patent describes the threshold voltage ... ".) Accordingly, the undersigned finds Spansion's interpretation of "threshold voltage" to be in error and the disclosure of target programmed and erased threshold voltages in the Jung Patent to satisfy the limitation "threshold voltage" in the claims of the '194 patent.

With regard to Spansion's argument that the Jung Patent does not disclose the "second voltage" the undersigned is also not persuaded. Spansion's argument is premised on the fact that the Jung Patent does not disclose the value of Vcc that Dr. Pashley used to calculate the second voltage. However, the undersigned notes that "Vcc" is not a limitation of the claims of the '194 patent. Also, Dr. Pashley clearly explained at the hearing in this investigation that his use of 3.3 volts for Vcc was based on the physical parameters of the memory cell disclosed in the Jung Patent. (Pashley, Tr. at 2106:4-20.) Further, the 3.3 volts used by Dr. Pashley is a "worst case" scenario. Spansion argues that the value for Vcc could be as high as 5 volts, but as Dr. Pashley correctly pointed out, using 5 volts for Vcc would only make his analysis stronger. (Pashley, Tr. at 2318:15-20 ("So, for all of my analysis that I did on the [Jung Patent], I assumed 3 volts because it was the worst case. If the opposing counsel is right and it could have been 5 volts, it would have only made the local self-boost better.") Thus, the undersigned finds Dr. Pashley's calculation of the second voltage reliable and it is hereby adopted.

(2) Claims 15-17, 20-22

Claims 15-17 and 20-22 depend from independent claims 13 and 18, respectively. Dependent claims 15 and 20 require that the "fourth voltage is provided to a plurality of wordlines." As plainly seen in Figure 5 of the Jung Patent, Vpass2, i.e., the fourth voltage, is provided to more than one wordline. (RX-86, Fig. 5l; RX-124C (Pashley, Wit. Stat.) at Q&A 112-13.) Accordingly, the undersigned finds the Jung Patent discloses the additional limitations of dependent claims 15 and 20. In Order No. 34, the undersigned found that claims 16, 17, 21, and 22 did not further limit independent claims 13 and 18. Accordingly, having found above that the Jung Patent discloses all the limitations of claims 13 and 18, the undersigned also finds that the Jung Patent satisfies dependent claims 16, 17, 21, and 22.

b. Jung Article

Respondents argue that the Jung Article anticipates the asserted claims of the '194 patent (RIB at 75-76.) Spansion argues that the Jung Article does not anticipate. (CIB at 70.) In particular, Spansion argues that the Patent Office already determined that the Jung Article does not anticipate. (*Id.*) Spansion also argues that Dr. Pashley admitted that he did not consider the proper scope of the undersigned's claim construction in analyzing the Jung Article and that under the proper scope the Jung Article does not anticipate. (*Id.*) Like Spansion, the Staff also argues that the Jung Article does not anticipate the asserted claims of the '194 patent. (SIB at 63-64.)

The Jung Article was published in February 1996, which is before the July 24, 1996 effective filing date of the '194 patent. (See JX-21.) Accordingly, the Jung Patent is prior art under 35 U.S.C. § 102(e). 35 U.S.C. § 102(e). The Jung Patent was disclosed to the Patent

Office and considered during the examination of the '194 patent. And yet, the examiner allowed the '194 patent, even in view of the Jung Article. (JX-004.) Consequently, Respondents have a heavy burden of proof to show invalidity. *Metabolite Laboratories, Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1368 (Fed. Cir. 2004) (holding there is a "heavy burden of proof" to show invalidity when the examiner considered a prior art reference during prosecution or the reference is merely cumulative of a reference that was considered).

For the reasons discussed in detail below, the undersigned finds that the evidence has failed to show that the Jung Article anticipates the asserted claims of the '194 patent.

In a single paragraph, Respondents argue that the Jung Article anticipates the asserted claims of the '194 patent. (RIB at 75-76.) The entirety of Respondents' argument is that "[t]he Jung ISCC paper anticipates the claims if the term "threshold voltage" is construed as covering either the programmed or erased states, as opposed to both." (*Id.* at 75.) Respondents argue that if the "threshold voltage" is construed in such a manner "the asserted claims are anticipated by the Jung ISSCC Paper, which will not have programmed cells above the selected wordline." (*Id.* at 76.)

To prove infringement, Respondents must show that the Jung Article discloses every limitation of the asserted claims. Here, however, Respondents do not even attempt to make such a showing. Respondents' anticipation argument focuses only on one part of a single limitation in claims 13 and 18. Moreover, the undersigned's claim construction is clear that the term "threshold voltage" covers both the programmed and erased states. (*See* Order No 34. at 71 ("In every embodiment of the invention described in the '194 patent, the specification describes the

threshold voltage in terms of both its programmed and erased states."), 73 ("[T]he phrases 'a threshold voltage of a fourth device' and a 'threshold voltage of a fifth device' mean 'threshold voltage of a ... device, whether programmed or erased.").) Thus, Respondents' invalidity argument is based on a false premise. Further, Spansion's expert, Dr. Orlowski, demonstrated that the Jung Article cannot satisfy element (d) of claims 13 and 18 for a cell whose threshold voltage "is programmed or erased." (RX-3638C (Orlowski, Wit. Stat.) at Q&A 91-94.) Accordingly, for the reasons discussed above, the undersigned finds Respondents have failed to prove by clear and convincing evidence that the Jung Article anticipates the asserted claims of the '194 patent.

3. Obviousness

Respondents argue that the asserted claims of the '194 patent are invalid as obvious in light of the Jung Article in view of the Hirose Application. (RIB at 75-76.) Spansion argues that the asserted claims are not obvious. (CIB at 70-72.) In particular, Spansion argues that the Hirose Application is not prior art. (*Id.* at 70-71.) Spansion also argues that even if the Hirose Application is prior art, the evidence shows that one of skill in the art would not combine the references. (*Id.* at 71-72.) The Staff does not address this invalidity argument.

The Hirose Application, titled "Bias Scheme for NAND Structured Flash Memories" was filed on October 25, 1995. (RX-33.) The Hirose Application matured into United States Patent No. 6,163,048, and thus, contrary to Spansion's argument, is prior art under 35 U.S.C. § 102 (e). *In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010) ("'applications for patent' under section 102 includes both provisional and non-provisional patent applications").

For the reasons discussed in detail below, the undersigned finds that the evidence has failed to show that the asserted claims of the '194 patent are obvious in light of the Jung paper in view of the Hirose Application.

In a single scant paragraph, Respondents argue that the asserted claims of the '194 patent are invalid as obvious. (RIB at 76.) Respondents argue that the isolation scheme disclosed in the Jung paper is not limited to its disclosed voltages and that the Hirose Application discloses the use of program and erase threshold voltages that are both negative. (*Id.*) Thus, according to Respondents, "it would have been obvious to one skilled in the art, and a matter of routine design choice, to use the negative threshold voltage programming values disclosed in the Provisional Application with the Jung ISSCC Paper programming scheme." (*Id.*)

A person is not entitled to a patent if the differences between the claimed invention and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103. The underlying factual inquiries relating to non-obviousness include: 1) the scope and content of the prior art; 2) the level of ordinary skill in the art; 3) the differences between the claimed invention and the prior art; and 4) secondary considerations of non-obviousness, such as long-felt need, commercial success, and the failure of others. *See Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). Here, Respondents do not substantively address any of these factors. Respondents only make cursory assertions and conclusory arguments. Accordingly, the undersigned finds Respondents have failed to meet the clear and convincing standard necessary to invalidate the '194 patent based on obviousness. *See PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d

1342, 1360 (Fed. Cir. 2007) (stating that a patent challenger must "show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so."); *see also Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same (III)*, Inv. 337-TA-630, Initial Determination, 2009 WL 3092628 (U.S.I.T.C. August 28, 2009.) ("The ALJ finds that, by simply making cursory assertions and conclusory arguments comprised of two paragraphs, Respondents have blatantly failed to meet the clear and convincing standard necessary to invalidate the '106 Patent based on obviousness.")

Moreover, substantial evidence shows that one of ordinary skill in the art at the time of the invention would not have reason to combine the Jung paper with the Hirose Application. As Spansion's expert, Dr. Orlowski, testified, the two references teach away from each other and the combination of the two references would lead to a non-working invention. (CX-3638C (Orlowski, Wit. Stat.) at Q&A 230, 235-239.) Additionally, Respondents' own expert, Dr. Pashley, admitted that no person of skill in the art would ever use the system disclosed in the Hirose Application. (*See id.* at Q&A 234; CX-488 (Pashley, Depo.) at 32:17-33:14, 57:23-58:3.) Thus, for this additional reason, the undersigned finds that Respondents have failed to prove that the asserted claims of the '194 patent would have been obvious in light of the Jung Article in view of the Hirose Application.

VI. Affirmative Defenses

A. Apple Licensing Defense

As an affirmative defense to infringement, Apple contends that it has an express license with Spansion to the patents-in-suit resulting from a letter agreement executed between the parties on February 10, 2009.[19] (AIB at 2.) Apple argues that, by its terms, the letter agreement amounts to an unconditional covenant not to sue and that pursuant to Federal Circuit precedent should be interpreted as a non-exclusive license to the patents-in-suit. (*Id.* at 5.)

Spansion asserts that because the United States Bankruptcy Court for the District of Delaware ("Bankruptcy Court") previously held that the letter agreement did not constitute a license, the doctrine of issue preclusion prevents Apple from now arguing to the contrary.[20] (CIB

[19] [ ]

[

]

(RX-0056C.)

[20] On March 2009 Spansion filed voluntary petitions in the United States Bankruptcy Court for the District of Delaware for reorganization relief under Chapter 11 of the United States Bankruptcy Code. (CX-

(continued...)

at 73-74; CRB at 39.) The Staff also asserts that issue preclusion applies, arguing that the parties already litigated before the Bankruptcy Court the issues of whether the letter agreement granted Apple a license to the patents-in-suit and whether Apple could elect to retain the license under Section 365(n) of the Bankruptcy Code. (SIB at 73.)

In rebuttal, Apple argues that the Bankruptcy Court never decided whether the letter agreement was a license. (ARB at 3). Apple further argues that the Bankruptcy Court only considered whether Spansion could reject the Letter Agreement, and Apple never had the burden of proving it had a license. (*Id.* at 2-3.) Therefore, according to Apple, issue preclusion should not apply. (*Id.*)

Chapter 11 of the Bankruptcy Code permits a trustee, with the Bankruptcy Court's approval, to accept or reject any executory contract. (*See* 11 U.S.C. § 365(a).) However, under Section 365(n), "[i]f the trustee rejects an executor contract under which the debtor is a licensor of a right to intellectual property, the licensee under such contract may elect— (A) to treat such contract as terminated by such rejection …; or (B) to retain its rights … under such contract ... to such intellectual property … as such rights existed immediately before the case commenced …" (11 U.S.C. § 365(n).) Here, the facts show that Spansion filed a motion in Bankruptcy Court pursuant to Section 365(a) to reject the letter agreement, which the Bankruptcy Court subsequently granted. (CX-3691C [

] *see also* RX-2692 at 6 (noting that

[20](...continued)
10C at Q&A 33.)

the Bankruptcy Court also held a hearing on the motion on September 1, 2009).) Thereafter, Apple filed a notice of election pursuant to Section 365(n) to retain its rights in the letter agreement.

After Apple filed its election, Spansion filed a motion to enforce the Bankruptcy Court's order granting its motion to reject the letter agreement and to strike Apple's election ("motion to enforce"). (*Id.*; *see also* RX-2693 at 63.) Apple filed an opposition to Spansion's motion to enforce and the Bankruptcy Court held a hearing on the matter on February 5, 2010. Both Spansion and Apple participated in the hearing. At the hearing the Bankruptcy Judge stated the following:

> Having considered the record, the arguments of counsel, the Court concludes that there is no ambiguity in the September 1, 2009 order authorizing rejection of the February 10, 2009 agreement between Spans ion and Apple. I conclude secondly that there is insufficient evidence in the record before me, including any arguments and factual record made at the September 1 hearing, to conclude that the provision in the February 10, 2009 agreement to dismiss Apple from the ITC action gave rise to a license sufficient to trigger any Section 365(n) right in favor of Apple. And even if the February 10, 2009 agreement did give rise upon rejection to a theoretical right to Apple under Section 365(n), there is insufficient evidence in the record before me upon which to conclude that there remains any post rejection life to any such license due to the apparent cessation of business between Spansion and Apple to which any license is necessarily related. Therefore, the Debtors' motion to enforce this Court's September 1, 2009 order will be granted. To the extent that it asks Apple's notice of election under Section 365(n) be stricken.

(RX-2692 at 10.)

On March 3, 2010, the Bankruptcy Court issued a "FINAL ORDER" stating that "for the reasons set forth on the record at the February 5, 2010 telephonic hearing ... the Motion to Enforce is **GRANTED** to the extent that it requests that the *Notice of Election Under 11 USC*

365(n) ... filed by Apple, Inc. be stricken and the Notice is hereby Stricken."[21] (CX-3692 (emphasis in original).) Subsequently, Apple filed an appeal of the Bankruptcy Court's March 3, 2010 order challenging the Court's decision to strike their election under Section 365(n). (RX-2693 at 66, 80.)

For issue preclusion to apply: (1) the issue must be identical to the one decided in the first action; (2) the issue must actually have been litigated in the first action; (3) the resolution of the issue must have been essential to a final judgment in the first action; and (4) the party against whom preclusion is asserted must have had a full and fair opportunity to litigate the issue in the first action. *Certain Endoscopic Probes For Use in Argon Plasma Coagulation Systems*, 337-TA-569, 2008 WL 274869 at n.24 (January 16, 2008); *see also Certain NOR and NAND Flash Memory Devices and Products Containing Same*, 337-TA-560, 2006 ITC LEXIS 749, at *7, Order No. 5 (May 2006).

By its very terms, Section 365(n) was only available to Apple if it was a licensee to intellectual property under the letter agreement. Likewise, Apple's affirmative defense in this investigation is only available to Apple if it is a licensee under the letter agreement. As quoted above, the Bankruptcy Judge found that the letter agreement did not give rise to a license sufficient to trigger any Section 365(n) right in favor of Apple. Because Section 365(n) was only

[21] The Bankruptcy Court's March 3, 2010 order also amended its September 1, 2009 order to provide "that such order is without prejudice to the issue of whether, under applicable state law, the February 10, 2009 letter agreement ... has been or can be terminated by Spansion." (CX-3692.) Apple argues vehemently that because the letter agreement was not "terminated" that the issue of whether it has a license was unresolved by the Bankruptcy Court. The undersigned disagrees and as discussed herein finds that the March 3, 2010 order of the Bankruptcy Court conclusively determined for purposes of this investigation that the letter agreement did not grant Apple a license to the patents-in-suit.

available to Apple if it was a licensee to intellectual property under the letter agreement, the undersigned finds that the Bankruptcy Judge, in finding that the letter agreement did not give rise to a license and striking Apple's election, necessarily had to decide whether in fact the letter agreement granted Apple a license to the patents-in-suit. Additionally, because Apple has appealed the Bankruptcy Court's March 3, 2010 order striking Apple's purported Section 365(n) election, and based on the Bankruptcy Judge's own characterization of the order as a "Final Order," the undersigned finds that the March 3, 2010 order constitutes a final judgment. Further, the undersigned finds that Apple had a full and fair opportunity to litigate the issue of whether the letter agreement grants Apple a license to the patents-in-suit in Bankruptcy Court. The record is clear that Apple filed a written opposition to Spansion's motion to enforce and actively participated in the subsequent hearing on the issue. Furthermore, the Bankruptcy Judge explicitly notes in granting the motion to enforce that his decision is not only based on the record before him on the motion to enforce, but that he also considered "any arguments and factual record made at the September 1 hearing" on Spansion's motion to reject, which Apple also actively participated in.

For the reasons discussed above, the undersigned finds that the Bankruptcy Court's finding that the letter agreement does not grant Apple a license to the patents-in-suit is binding on the undersigned in this investigation. Accordingly, because the letter agreement does not grant Apple a license to the patents-in-suit, the undersigned finds that Apple has failed to prove its affirmative defense to Spansion's infringement allegations based on an express license to the patents-in-suit.

B. Equitable Estoppel

Apple argues that in light of Spansion's conduct surrounding the letter agreement, Spansion should be estopped from asserting the patents-in-suit against Apple. (AIB at 16). Apple claims it was misled when Spansion agreed in writing to remove Apple from this investigation, but then failed to take steps to complete that obligation despite continually expressing an intent to do so. (*Id.* at 17-18.) Apple asserts that Spansion induced it to do business with Spansion, despite Apple's general policy of not doing business with companies that bring suits against it. (*Id.*) Apple argues that it was reasonable for it to rely on Spansion's representations that it would dismiss Apple from this investigation based on its assumption that Spansion would fulfill the terms of the letter agreement and the repeated assurances by high-level Spansion executives that Apple would be dismissed. (*Id.* at 18-19.) Apple argues that it would be prejudiced if Spansion is not estopped from enforcing the patents-in-suit against it because Spansion received over [ ] in business that Apple would not have given Spansion absent its representations to dismiss Apple. (*Id.* at 20.) For example, Apple states that but for Spansion's conduct, Apple would not have purchased over [ ] worth of products in the [ ] prior to the Bankruptcy Court's rejection of the letter agreement. (*Id.*)

Spansion refutes Apple's allegations, arguing that Apple cannot demonstrate any of the elements of equitable estoppel. (CIB at 84). First, Spansion asserts that, other than a March 16, 2009 e-mail that did not reference the letter agreement, Apple could not reasonably rely on its allegedly misleading representations. (*Id.* at 84-85.) Moreover, Spansion alleges that because Apple can only point to purchases of Spansion products that were received without complaint as

evidence of prejudice, Apple cannot establish that it suffered the sort of financial loss that would amount to economic prejudice for estoppel purposes. (*Id.*; *see also* CRB at 44.)

The Staff also argues that Spansion should not be equitably estopped from asserting the patents-in-suit against Apple because Apple could not rely on any purportedly misleading actions or statements by Spansion after the Bankruptcy Court rejected the letter agreement. (SIB at 74-75.) While the Staff concedes that both parties appeared committed to complying with the letter agreement prior to the bankruptcy proceeding, the Staff maintains that Apple was on notice that the letter agreement may not be binding depending on the Bankruptcy Court's ruling following receipt of Spansion's email on March 16, 2009.[22] (*Id.* at 76.)

In reply to Spansion's arguments, Apple contends that it was entitled to rely on Spansion's conduct both before and after the Bankruptcy Court rejected the letter agreement because the letter agreement was consummated prior to Spansion's petition for bankruptcy under Chapter 11 and the Bankruptcy Court's rejection of the letter agreement had no effect on the continued existence of Spansion's contractual obligation to Apple. (ARB at 8-9.) Additionally, Apple asserts that Spansion mischaracterizes the content of the March 16, 2009 e-mail, stating that is was intended to convey Spansion's continued intent to dismiss Apple from the present suit. Finally, Apple reiterates that it did experience a change in economic position, contrary to

---

[22] The e-mail of March 16, 2009 [
] stated, in part, that: [

]

(RX-0052C). The e-mail further explains that [

] *Id.*

Spansion's protests, when it purchased [ ] worth of product from Spansion that it would not have in the absence of the letter agreement.

Under 35 U.S.C. § 282, equitable estoppel is a recognized defense that may bar a patentee's entire claim of patent infringement. *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1028 (Fed. Cir. 1992) (en banc). To establish a defense of equitable estoppel, a party must demonstrate by a preponderance of the evidence that:

a. The patentee, through misleading conduct, leads the alleged infringer to reasonably infer that the patentee does not intend to enforce its patent against the alleged infringer. "Conduct" may include specific statements, action, inaction, or silence where there was an obligation to speak.

b. The alleged infringer relies on that conduct.

c. Due to its reliance, the alleged infringer will be materially prejudiced if the patentee is allowed to proceed with its claim.

(*Id.*) Finally, even where all three elements of equitable estoppel are established, the undersigned must take into consideration any other evidence and facts respecting the equities of the parties in exercising his discretion and deciding whether to allow the defense of equitable estoppel to bar the suit. *Certain Semiconductor Chips Having Synchronous Dynamic Random Access Memory Controllers and Products Containing the Same*, Inv. No. 337-TA-661, Initial Determination at 71 (January 22, 2010).

As to the third prong, the material prejudice may be either economic or evidentiary. *Aukerman*, 960 F.2d at 1033. With regard to economic prejudice, the Federal Circuit has stated that "[e]conomic prejudice may arise where a defendant and possibly others will suffer the loss of monetary investments or incur damages which likely would have been prevented by earlier

suit." (*Id.*) Courts must look to whether the defendant changed its economic position during the period of delay resulting in losses beyond those attributable to a finding of liability for infringement. *Humanscale Corp. v. CompX Intern. Inc.*, 2010 WL 3222411, at *8 (E.D. Va. August 16, 2010).

Here, Apple asserts that it suffered a change in economic position. However, the undersigned finds for the reasons discussed below that Apple has not established a detrimental change in economic position sufficient to show that it was materially prejudiced by Spansion's conduct. (AIB at 20). At no point does Apple attempt to argue that it was induced to purchase product for which it had no use, and at no point does Apple demonstrate that it suffered any form of financial loss as a result of Spansion's conduct. Rather, Apple's primary argument is that it purchased over [ ] worth of product that it otherwise would not have purchased from Spansion. (ARB at 10). Apple's contention that it would not have used Spansion as a supplier but for Spansion's representations does not demonstrate that Apple would not have spent [ ] on the same products with another supplier. Apple merely asserts that it [ ] (AIB at 20; RFF I.88; Blevins, Tr. at 2239:25-2240:5.) Similarly, Apple never argues that it was susceptible to increased infringement damages as a result of Spansion's conduct or that it would have changed its products to avoid future liability. In fact, Apple's main objection to Spansion's conduct seems to be that Spansion received money from Apple through sales that Spansion could potentially use to finance this investigation. (AIB at 20) ("To allow Spansion to enforce these patents against Apple…would be to force Apple to fund the litigation against it.). Because Apple has failed to show that it suffered a change in

economic position that resulted in Apple being materially prejudiced in this investigation, the undersigned finds that Spansion is not equitably estopped from enforcing the patents-in-suit against Apple.

VII. DOMESTIC INDUSTRY

A complainant in a patent-based investigation is afforded relief under Section 337 only when a domestic industry with respect to the patents at issue exists or is in the process of being established. *Certain CD-ROM Controllers and Products Containing the Same - II*, Inv. No. 337-TA-409, USITC Pub. No. 3251 Comm'n Op. at 36 (October 18, 1999); *Certain Plastic Encapsulated Integrated Circuits*, Inv. No. 337-TA-315, Comm. Op. at 16 (1992); 19 U.S.C. § 1337(a)(2). The domestic industry requirement of Section 337 has two prongs: an economic prong and a technical prong. *Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. 337-TA-650, Comm. Op. at 38 (April 14, 2010). The economic prong requires certain activities and the technical prong requires that those activities relate to the intellectual property being protected. (*Id.*) A domestic industry exists if:

> there is in the United States, with respect to the articles protected by the . . . patent . . . concerned --
>
> (A) significant investment in plant and equipment;
>
> (B) significant employment of labor or capital; or
>
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). A domestic industry is in the process of being established if the patent owner "can demonstrate that he is taking the necessary tangible steps to establish such an

industry in the United States and there is a significant likelihood that the industry requirement will be satisfied in the future." *Certain Stringed Musical Instruments and Components Thereof*, Inv. 337-TA-586, Comm. Op. at 13. (May 16, 2008) (internal citation and quotations omitted).

With regard to Section 337(a)(3)(A) and (B), "the technical prong is the requirement that the investments in plant or equipment and employment of labor or capital are actually related to 'articles protected by' the intellectual property right which forms the basis of the complaint." (*Id.*) With regard to Section 337(a)(3)(C), "the technical prong is the requirement that the activities of engineering, research and development, and licensing are actually related to the asserted intellectual property right."[23] (*Id.* at 14.)

Spansion argues that it satisfies the economic prong of the domestic industry requirement through its substantial investments in research and development related to the '194 patent and through its substantial investments in its licensing activities related to the '877 and '194 patents. (CIB at 87-107.) Alternatively, Spansion argues that it is in the process of establishing a domestic industry with regard to the '877 and '194 patents. (*Id.* at 107-109.)

A. Research and Development Related to the '194 Patent

Spansion argues that it satisfies the domestic industry requirement through its substantial investments in research and development related to the asserted '194 patent. (CIB at 56-59, 88-93.) Spansion argues that its R&D and engineering activities related to its [ ]

[23] Under Section 337(a)(3)(C), there is no requirement that a complainant actually produce an article protected by the intellectual property which forms the basis of the complaint. *See* H.Rep.No. 100-40, at 157 (1987) ("The definition does not require actual production of the article in the United States if it can be demonstrated that significant investment and activities of the type enumerated are taking place in the United States."); *see also* 132 Cong. R. H1782 (Apr. 10, 1986)

products meet the technical prong for claims 13-22 of the '194 patent. (*Id.* at 57.) In particular, Spansion argues that its expert, Dr. Cottrell, reviewed Spansion documents from [ ] that showed that [ ]closely related to the specific subject matter of claims 13-22 of the '194 patent. (*Id.*) Spansion also argues that Dr. Cottrell reviewed the [ ] the limitations of claims 13, 16-18, and 21-22. (*Id.*) Spansion asserts that its efforts developing the [ ] which Spansion also argues practices the '194 patent.

Spansion argues that it has made substantial investments in the development of its [ ] products through its R&D and engineering activities. (*Id.* at 88.) In particular, Spansion argues that its R&D expenditures in the United States developing the [ ] (*Id.*) As part of its R&D activities related to the [ ] products, Spansion argues that it made significant investments in[ ] in the United States. (*Id.*) Specifically, Spansion argues that in [ ] (*Id.*) Spansion also argues that it spent [ ] (*Id.*) Additionally, Spansion asserts that it employed [ ]

[

] (*Id.*) In 2009, Spansion asserts that it employed [

] (*Id.*)

Spansion also argues that it had made substantial investments in R&D activities related to the development of its [ ] technology. (*Id.* at 89.) In particular, Spansion argues that it invested [ ] (*Id.*) Spansion also argues that as of the date of the filing of the complaint in this investigation, R&D activities related to the [ ] technology accounted for [

] (*Id.*) Additionally, Spansion argues that it spent [

] (*Id.*) Further, Spansion argues that it employed [

] (*Id.*)

Respondents argue that Spansion has failed to prove a domestic industry through its investments in research and development related to the '194 patent. (RIB at 77-80.) In particular, Respondents argue that Spansion has not shown that its R&D activities are "actually related to the [patent] right." (*Id.* at 77.) According to Respondents, Spansion has either

[

] (*Id.* at 78.) Respondents argue that the [ ] that Spansion asserts in support of its domestic industry are unreliable and lack proper foundation. (Id.) Moreover, Respondents note that such [

] (*Id.* at 79.) With regard to

Spansion's [ ] technology, Respondents argue that none of the documents cited by Spansion relate to the [ ] and that [ ] (*Id.* at 79-80.)

The Staff also argues that Spansion has failed to prove a domestic industry through its investments in research and development. (SIB at 64, 65, 67, 68.) The Staff argues that Spansion has made substantial investments in its R&D and engineering activities directed to its [ ] that meet the limitations of the claims of the '194 patent. (*Id.* at 65, 67, 68.) Thus, the Staff argues that Spansion has failed to prove that its [ ] products meet the technical prong of the domestic industry requirement, because a domestic industry cannot rest on a product that is not ready for sale and has not been shown conclusively that it will practice the patents-in-suit when it is produced. (*Id.* at 65.)

For the reasons discussed in detail below, the undersigned finds that Spansion has failed to prove that it has a domestic industry based on its R&D and engineering activities related to its [ ] technology. Among other things, the undersigned finds that Spansion has failed to prove that its R&D and engineering activities "actually relate" to the '194 patent and that its investments in its R&D and engineering activities exploit the '194 patent.

The technical prong of the domestic industry analysis under Section 337(a)(3)(c) is the "requirement that the activities of engineering, research and development, and licensing are actually related to the asserted intellectual property right." *Certain Stringed Musical Instruments*, Inv. 337-TA-586, Comm. Op. at 14 (emphasis added). To satisfy this requirement it

is insufficient to rely on activities that "generally relate to the subject area of the patent." *See Certain Dynamic Sequential Gradient Compression Devices and Component Parts Thereof*, Inv. No. 337-TA-335, Comm'n Op. at 60, 1992 ITC LEXIS 710 (Nov. 1992). "Indeed, the plain language of the statue provides that the domestic industry comprises only those activities (either manufacturing or non-manufacturing) which exploit the intellectual property rights at issue." *Id.* The Commission has held that the exploitation of a patent under 337(a)(3)(C) includes activities that put the patent to productive use, *i.e.*, bring the patented technology to market, as well as, licensing activities that take advantage of the patent, *i.e.*, solely derive revenue. *Certain Coaxial Cable Connectors*, Comm'n Op. at 49-50. "While it is not necessary that a particular research and development project result in a completed product to be considered part of the relevant domestic industry, it must be clear that the project is devoted to the exploitation of the patent." *Certain Dynamic Sequential Gradient Compression Devices*, Comm'n Op. at 64.

The evidence shows that Spansion's [

] (CX-5C (Pourkeramati, Wit. Stat.) at Q&A 37.) The evidence also shows that Spansion's [

] (Pourkeramati Tr., at 320.) Thus, the [

] (CX-5C (Pourkeramati, Wit. Stat.) at Q&A 52, 53, 54 [

]

[

]"), 58, 85-86.)

Spansion's expert, Dr. Cottrell, purports to show that Spansion's [ ] technology meets the limitations of claims 13, 16-18, and 21-22 of the '194 patent, using [

] However, there is no indication in the record as to where [

] are related. Moreover, Mr. Pourkeramati admitted [

] (Pourkeramati, Tr. at 266:22-25; RX-3602C (Cottrell, Wit. Stat.) at Q&A 49.) Moreover, Mr. Pourkeramati testified that because [ ] (Pourkeramati, Tr. at 305:7-11.) Accordingly, the undersigned finds Dr. Cottrell's opinion on this matter unpersuasive.

Because Spansion has yet to determine [

] and because Spansion has failed to put on any reliable evidence that shows that the development of Spansion's [ ] technology is specifically directed to

implementing the '194 patent, the undersigned finds that Spansion has failed to clearly show that the development of its [ ] technology is devoted to the exploitation of the '194 patent. *Certain Dynamic Sequential Gradient Compression Devices*, Comm'n Op. at 64, 65 ("Thus, absent some evidence ... directed towards a product which would fall within the claims of the '087 patent, it is not possible to determine whether .... constitutes an exploitation of the patent.") The most that can be said based on the evidentiary record is that [

] as the '194 patent. However, that is insufficient to prove the existence of a domestic industry. *Certain Dynamic Sequential Gradient Compression Devices*, Comm'n Op. at 60. Accordingly, the undersigned finds that Spansion has failed to prove a domestic industry based on its engineering and R&D activities under Section 337(a)(3)(C).

However, should the Commission find that Spansion's [ ] technology exploits the '194 patent, the undersigned finds that the evidence has shown Spansion has made substantial investments through research and development and engineering; plant and equipment; and labor and capital devoted to the [ ] family of flash memory products. In particular, the evidence shows that Spansion's U.S. research and development expenditures on the [

] (CX-9C; CX-10C (Button, Wit. Stat.) at Q&A 137; CX-1444C; CX-1447C.) These R&D activities involved significant uses of Spansion's [

] (*Id.*) Spansion's U.S. R&D expenditures on the [

] (*Id.*) Similar to

the [ ] technology, Spansion's R&D activities on the [ ] technology also involved significant uses of Spansion's [ ] (*Id.*)

B. Licensing Activities Related to the '877 and '194 Patents

Spansion argues that it satisfies the domestic industry requirement through its substantial investments in its licensing activities related to the asserted '877 and '194 patents. (CIB at 93.) In support, Spansion relies on: its license with [

] (*Id.* at 97-99). Spansion argues that its licensing activities are connected to the patents-in-suit because all of its licenses include [ ] and the patents are both included as part of Spansion's [ ] (*Id.* at 101-102.) Spansion argues that it spent almost [

] (*Id.* at 99.) Of the almost [

] (*Id.*) Spansion also asserts that it has spent over [ ] in this investigation protecting its intellectual property. (*Id.*) Additionally, Spansion asserts that it intends to spend over [ ]

[ ] (*Id.*) Spansion further asserts that it has employees dedicated to the implementation of [ ] including employees at the [ ] (*Id.*)

Respondents argue that Spansion has failed to prove a domestic industry related to the '877 and '194 patents through its licensing activities. (RIB at 80-87.) Respondents argue that Spansion did not have a domestic industry based on its licensing activities [ ] (*Id.* at 81, 83.)

The Staff argues that Spansion has shown a domestic industry based on its licensing activities. (SIB at 68-72.) Specifically, the Staff argues that the evidence shows that Spansion's licensing efforts, [ ] constitute a substantial investment in licensing of the asserted patents. (*Id.* at 70.)

Spansion argues that its licensing-based domestic industry is supported by [ ] However, "only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3)." *Certain Coaxial Cable Connectors*, Comm. Op. at 51, n.17.[24] In this case, Spansion filed its complaint with the Commission on November 17, 2008.

[24] The Commission has in the past considered the existence and sufficiency of an alleged domestic industry at various points during the investigative process. *See Certain Short-Wavelength Light Emitting Diodes, Laser Diodes and Products Containing Same*, Inv. No. 337-TA-640, 2008 ITC LEXIS 1041, Order No. 16, at *31 (June 18, 2008) (unreviewed by Commission)("As for the cut-off date for establishing a domestic industry, the Commission has used not only the filing of the complaint as the cut-off point for (continued...)

(73 Fed. Reg. 77059.) Therefore, only Spansion's licensing activities before November 17, 2008 are relevant in determining whether Spansion has a licensing-based domestic industry.

As discussed in detail below, the undersigned finds that Spansion has failed to prove that it has a licensing-based domestic industry. Among other things, the undersigned finds that Spansion has failed to provide evidence of any [

]

1. [ ]

Spansion executed a license agreement with [

] (CX-1462C; CX-10C

[24](...continued)
satisfaction of the domestic industry requirement, but it has also used the end of the discovery as the cut-off point."); *Certain Concealed Cabinet Hinges*, 337-TA-289, 1990 ITC LEXIS 3, Comm. Op. at 21 (Jan. 9, 1990) (holding that "we assess the existence of the domestic industry as of the discovery cutoff date prior to the evidentiary hearing"); *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, USITC Pub. No. 3003, 1996 ITC LEXIS 556, Comm'n Op. at 22 (Nov. 1996) (taking into account events that occurred after the target date in evaluating the existence of a domestic industry and the appropriateness of any continued relief). However, the Commission explicitly stated in its most recent pronouncement on the subject in *Certain Coaxial Cable Connectors* that the domestic industry requirement should be assessed as of the date of the complaint. *Certain Coaxial Cable Connectors*, Comm. Op. at 51, n.17. In *Certain Coaxial Cable Connectors*, the Commission held that a complainant's litigation expenditures could be used to support a licensing-based domestic industry under Section 337 (a)(3)(C) if the complainant could show that its asserted litigation activities were related to licensing and the patents-in-suit, and that its investments in those activities were substantial. *Certain Coaxial Cable Connectors*, Comm. Op. at 54. The Commission, finding the record undeveloped on those points, remanded the investigation for further proceedings consistent with its holding. *Id.* Because on remand the relevancy of complainant's asserted litigation activities will necessarily be judged based on the Commission's statement that "only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3)," the undersigned finds the Commission's statement germane to its decision to remand the investigation and therefore, not dicta. Accordingly, the undersigned considers the Commission's pronouncement binding precedent.

(Button, Wit. Stat.) at Q&A 170.) The license agreement was part of a [

] (CX-10C (Button, Wit. Stat.) at Q&A 170.) The license agreement grants [

] (CX-07C (Eby, Wit. Stat.) at Q&A 84; CX-10C (Button, Wit. Stat.) at Q&A 173.) Under the license, [

] (CX-10C (Button, Wit. Stat.) at Q&A 174.)

The Commission has held that the exploitation of a patent under 337(a)(3)(C) includes licensing activities that put the patent to productive use, *i.e.*, bring the patented technology to market, as well as, licensing activities that take advantage of the patent, *i.e.*, solely derive revenue. *Certain Coaxial Cable Connectors*, Comm. Op. at 49-50. However, nothing in the evidence cited by Spansion indicates that Spansion [

] (RX-120C (Eby Dep.) at 292:25-293:15 (testifying that Spansion has [ ]). The evidence also does not show that [

] (CX-10C (Button, Wit. Stat.) at Q&A 173 (stating that Spansion's [ ]); Eby, Tr. at 906:14-21.) While Dr. Button opined that "nothing would prevent [

] [ ] the undersigned finds Dr. Button's testimony to be entirely unsupported and speculative, and therefore gives it no weight. Thus, the undersigned finds that Spansion has failed to prove that the [ ]

Moreover, Spansion provides no evidence that it engaged in any licensing activities [ ][25] Nor does Spansion provide evidence of any investments made [ ] Thus, the undersigned finds that the [ ] does not support Spansion's alleged licensing-based domestic industry.

2. [ ]

In [ ] (CX-1410C; CX-1411C; CX-1412C; CX-07C (Eby, Wit. Stat.) at Q&A 43; CX-10C (Button, Wit. Stat.) at Q&A 175.) [ ] (CX-1482.) The [ ] (CX-1411C.) The [ ]

[25] The Commission has held that the mere fact that a license is executed does not mean that a complainant can necessarily capture all prior expenditures to establish a substantial investment in the exploitation of the patents-in-suit. *Certain Coaxial Cable Connectors*, Comm. Op. at 50-51. According to the Commission, a complainant must clearly link each activity to its licensing efforts regarding the asserted patents. *Id.* (emphasis added).

[ ] (CX-1411C; CX-10C (Button, Wit. Stat.) at Q&A 177; Eby Tr. at 1025:13-24, 1026:14-19; Button Tr. at 1076:2-10.) The [ ] CX-1411C. The [

] (CX-1411C; Eby Tr. at 1025:17-19; RX-120C (Eby. Dep.) at 226:18-227 :11.) Under the[

] (CX-1411C; CX-07C (Eby, Wit. Stat.) at Q&A 77; CX-10C (Button, Wit. Stat.) at Q&A 177.)

Under the [

] (CX-10C (Button, Wit. Stat.) at Q&A 178; CX-1412C.) The [

] (CX-1412C at § 3.1.) In connection with those efforts, the [

] (*Id.* at § 3.1, Ex. B, Ex. C.) Also included in the [

] (*Id.* at Ex. A.)

Under the [

].(CX-10C (Button, Wit. Stat.) at Q&A 176; CX-1410C.) The [

] (*Id.* at Q&A 179.) According to the

[

] (CX-1410C at p. 2.)

Spansion asserts that it spent[

] (CX-10C (Button, Wit. Stat.) at Q&A 178, 180; CX-1440C; CX-1441C.) Spansion also asserts that it has taken steps to [

] (CIB at 96.) However, other than the [

]

Spansion provides no evidence that it [

] The [

]

[ ][26] Thus, the undersigned finds that the [

].

3. IBM

In [

].[27] CX-1455C; CX-10C (Button, Wit. Stat.) at Q&A 166.) The evidence suggests that the [

] (Button, Tr. at 1092:23-1093:2.)

As a consequence of [

]. (Button, Tr. at 1072:17-1073:14, 1073:19-21; CX-10C (Button, Wit. Stat.) at Q&A 166.) Spansion asserts that it spent [

] (CX-10C (Button, Wit. Stat.) at Q&A 166; CX-1440.)

Spansion provides no evidence of any expenditures related to the [

]. The only expenditures Spansion points to is the [ ]

---

[26] Spansion relies on its[

]. However, because the money is [

]. *See Certain Coaxial Cable Connectors*, Comm. Op. at 51 ("A complainant must clearly link each activity to its licensing efforts concerning the asserted patents.")

The undersigned would consider Spansion's [

] (*See supra*, at VII.A.)

[27] Spansion's patent portfolio includes approximately [ ] patents. (CX-1455 at § 2.1.2.)

[ ] However, the [

] Because Spansion cites to no [

]28

4. [ ]

Spansion signed a [

]. (CX-1459C; CX-1450C; CX-10C (Button, Wit. Stat.) at Q&A 165.) The agreements include [

]. (*Id.*)

---

28 Currently, Spansion [ ] Although the [

] (CX-10C (Button, Wit. Stat.) at Q&A 166.) While Spansion argues that [

] (*See* CX-10C (Button, Wit. Stat.) at Q&A 166.) Specifically, the undersigned finds no evidence of record to suggest that Dr. Button has any [

] Thus, the undersigned finds no basis for Dr. Button's opinion. Moreover Dr. Button's opinion is entirely speculative in that he states only that it is [ ] (*Id.*) Because there is no evidence to show that Spansion [

] the undersigned also finds that Spansion has failed to prove that the [ ] exploits the patents-in-suit.

Spansion provides no evidence of [

] Nor does Spansion provide any evidence of [

] Accordingly, the undersigned finds that the [

]

Respondents argue that as [

] (RIB at 81.) In particular, Respondents argue that because the [

] (*Id.*) However, *in Certain Coxial Cables*, the Commission explicitly held that licensing activities that "put the patent to a productive use, *i.e.*, bring a patented technology to market," constitute an exploitation of the patent. *Certain Coaxial Cables*, Comm. Op. at 49-50. Therefore, the undersigned finds Respondents' argument unpersuasive. Nevertheless, because Spansion has failed to show that it received any [

] the undersigned also finds that Spansion has failed to prove that the [ ] exploit the patents-in-suit.

5. [ ]

Prior to [ ] In [

] (CX-10C (Button, Wit. Stat.) at Q&A 164.) As part of Spansion [ ]

[ ]

(CX-1457C; CX-1458C; CX-10C (Button, Wit. Stat.) at Q&A 165.)

As previously stated, the Commission has held that the exploitation of a patent under 337(a)(3)(C) includes licensing activities that put the patent to productive use, *i.e.*, bring the patented technology to market, as well as, licensing activities that take advantage of the patent, *i.e.*, solely derive revenue. *Certain Coaxial Cable Connectors*, Comm. Op. at 49-50. However, nothing in the evidence cited by Spansion indicates that [

] The evidence also does not show that [

] In fact, the evidence shows that [

] (CX-10C (Button, Wit. Stat.) at Q&A 164) While Dr. Button opined that[

] the undersigned finds Dr. Button's testimony to be entirely unsupported and speculative, and therefore gives it no weight. (*See* CX-10C (Button, Wit. Stat.) at Q&A 164.) Thus, the undersigned finds that Spansion has failed to prove that its [ ]

Moreover, Spansion provides no evidence that it engaged in any [

] Thus, the

undersigned finds that Spansion has failed to show that the [ ] support its alleged licensing-based domestic industry.

6. [ ]

In [ ] (*See* CX-10C (Button, Wit. Stat.) at Q&A 167.) While Spansion argues that its [

] (*See* CIB at 97.) In fact, Spansion admits that[ ] (*Id.*) Thus, Spansion's expenditures related to the [

] *See Certain Coaxial Cable Connectors*, Comm. Op. at 50 ("[I]n order to establish that a substantial investment in exploitation of the patent has occurred through licensing, a complainant must prove that each asserted activity is related to licensing . . . [and] must also show that licensing activities pertain to he particular patent(s) at issue."); 19 U.S.C. 1337 (a)(3)(C). Moreover, Spansion provides no evidence of any [

] Accordingly, the undersigned finds that Spansion's [ ] does not support Spansion's licensing-based domestic industry.

7. [ ]

In [ ] (*See* CX-07C (Eby, Wit. Stat.) at Q&A 49-50 (stating that the [

] CX-10C (Button, Wit. Stat.) at Q&A 181 (stating that the [ ]

[ ] The [

] (*Id.*) In preparation for launching its [

] (*Id.*) The examination of Spansion's [

] (CX-07C (Eby, Wit. Stat.) at Q&A 49; Eby, Tr. at 992:3-993:7.) Spansion also engaged [

] (CX-07C (Eby, Wit. Stat.) at Q&A 49; Eby, Tr. at 931:21-931:23.) At the hearing, Mr. Eby testified that now that Spansion [

] (Eby, Tr. at 1016:18-1017:22.) Mr. Eby also testified that Spansion [ ] (*Id.* at 979:22-980:13, 983:14-984:13.) In total, the evidence shows that Spansion has invested approximately [ ] (*See* CX-10C (Buttony, Wit. Stat.) at Q&A 186; CX-1440.)

Spansion points to no evidence of any activities or investments made [

] Moreover, because of the [

]. Thus, the undersigned finds that Spansion's [ ] does not support its licensing-based domestic industry.

C. In the Process of Establishing a Domestic Industry

Spansion argues that if it is found that Spansion does not currently have a domestic industry with respect to the '194 and '877 patents, that it nevertheless is in the process of establishing a domestic industry under Section 337(a)(2). (CIB at 107.) Spansion argues that it will continue to [ ] (*Id.* at 108.) In particular, Spansion asserts that it projects to spend [ ] (*Id.*) Additionally, Spansion argues that it has taken tangible steps to [ ] (*Id.*) Spansion argues that there is a significant likelihood that the [ ] (*Id.*) Spansion further argues that its[ ] (*Id.* at 109.) According to Spansion, its business plan related to its [ ] (*Id.*) Spansion asserts that it plans to take a [ ] (*Id.*) Spansion also asserts that the [ ] (*Id.*)

Respondents argue that Spansion has failed to prove that it is in the process of establishing a licensing-based domestic industry. Specifically, Respondents argue that all of the evidence upon which Spansion relies [ ]

[ ] (RIB at 87.) Respondents also argue that [ ] do not demonstrate that Spansion is taking the necessary tangible steps to establish an industry or that there is a significant likelihood that the industry requirement will be satisfied in the future. (*Id.*) With regard to Spansion's [ ] (*Id.*) With regard to the [ ] (*Id.* at 109-110.)

The Staff does not address this argument. (*See* SIB at 65-72.)

As previously discussed, "only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3)." *Certain Coaxial Cable Connectors*, Comm. Op. at 51, n.17 (emphasis added). The only licenses that Spansion points to that [ ] As discussed in greater detail, *supra*, Spansion provides no evidence of an [ ] Thus, the undersigned finds that Spansion has failed to show that it took any tangible steps to establish a licensing-based domestic industry [ ] Moreover, because there is no evidence that [ ] exploit or will exploit the patents-in-suit, the undersigned also finds that Spansion has failed to show a substantial likelihood that

the domestic industry standard will be satisfied in the future. Accordingly, the undersigned finds that Spansion has failed to prove that it is in the process of establishing a licensing-based domestic industry under Section 337(a)(3)(C).

Furthermore, even if Spansion's [

] the undersigned finds, as discussed in detail, *supra*, that Spansion has failed to show a substantial likelihood that any of those activities will lead to the exploitation of the patents-in-suit. In particular, with regard to the [

] Nor is there any evidence that [

] Further, in light of the undersigned's determination that Spansion's 43nm and 32 nm ORNAND2 products don't practice the '194 patent, there is no evidence that Spansion will [ ] With regard to the [

] Finally, with regard to Spansion's [

]

CONCLUSIONS OF LAW

1. The Commission has subject matter jurisdiction in this investigation.

2. The Commission has personal jurisdiction over the Respondents.

3. Respondents' accused products do not infringe claims 1-8 of U.S. Patent No. 6,376,877.

4. Respondent Samsung's accused 63 nm, 51 nm, 42 nm, 35 nm, 32 nm, and 27 nm MLC NAND devices do not infringe claims 13, 15-18, and 20-22 of U.S. Patent No. 5,715,194.

5. Respondent Samsung's accused 42 nm OneNAND, 42 nm Flex-OneNAND, and 51 nm OneNAND flash memory devices infringe claims 13, 15-18, and 20-22 of U.S. Patent No. 5,715,194 in violation of 35 U.S.C. § 271(a).

6. Claims 1-8 of U.S. Patent No. 6,376,877 are valid.

7. Claims 13, 15-18, and 20-22 of U.S. Patent No. 5,715,194 are invalid under 35 U.S.C. §102(e).

8. Claims 13, 15-18, and 20-22 of U.S. Patent No. 5,715,194 are not invalid under 35 U.S.C. § 103.

9. Respondent Apple does not have an express license to U.S. Patent Nos. 6,376,877 and 5,715,194.

10. Spansion is not equitably estopped from asserting U.S. Patent Nos. 6,376,877 and 5,715,194 against Respondent Apple.

11. An industry in the United States does not exist that practices or exploits U.S. Patent Nos. 6,376,877 and 5,715,194 as required by 19 U.S.C. § 1337(a)(2) and (3).

12. An industry in the United States is not in the process of being established that will practice or exploit U.S. Patent Nos. 6,376,877 and 5,715,194 as required by 19 U.S.C. § 1337(a)(2) and (3).

13. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Patent No. 6,376,877.

14. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Patent No. 5,715,194.

INITIAL DETERMINATION

Based on the foregoing opinion, findings of fact, conclusions of law, the evidence, and the record as a whole, and having considered all pleadings and arguments, including the proposed findings of fact and conclusions of law, it is the Administrative Law Judge's Initial Determination that a violation of Section 337 of the Tariff Act of 1930, as amended, has not been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain flash memory chips and products containing the same.[29]

The Administrative Law Judge hereby CERTIFIES to the Commission this Initial Determination, together with the record of the hearing in this investigation consisting of the following: the transcript of the evidentiary hearing, with appropriate corrections as may hereafter be ordered by the Administrative Law Judge; and the exhibits accepted into evidence in this investigation as listed in the attached exhibit lists.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion a review of the Initial Determination or certain issues therein.

[29] The failure to discuss herein any matter raised by the parties, or any portion of the record, does not indicate that it has not been considered. Rather, any such matter(s) or portion(s) of the record has/have been determined to be irrelevant, immaterial or meritless. Arguments made on brief which were otherwise unsupported by record evidence or legal precedent have been accorded no weight. Additionally, arguments from the parties' pre-hearing briefs that are incorporated by reference into the parties' post-hearing briefs are stricken, unless otherwise discussed herein, as an improper attempt to circumvent the page limits imposed for post-hearing briefing.

RECOMMENDED DETERMINATION ON REMEDY AND BOND

Pursuant to Commission Rules 210.36(a) and 210.42(a)(1)(ii), the Administrative Law Judge is to consider evidence and argument on the issues of remedy and bonding and issue a recommended determination thereon.

I. Remedy and Bonding

A. Limited Exclusion Order

Spansion argues that should a violation be found that a limited exclusion order should issue which covers the accused flash memory devices and any of Respondents' products that contain the infringing flash memory devices. (CIB at 110-19.) Respondents argue that if a violation is found that any limited exclusion order that issues should not extend to Respondents' products that contain the flash memory chips found to infringe. (RIB at 89-98.) The Staff argues that a limited exclusion order should extend to some of Respondents' products that contain infringing chips, but not others. (SIB at 77-82.)

In this Initial Determination, no violation of Section 337 has been found. If, however, a violation of Section 337 is found by the Commission, the undersigned recommends that a limited exclusion order issue that covers all of Samsung's accused flash memory devices found to infringe the asserted patents and any products of the Respondents that contain said flash memory devices.

The Notice of Investigation makes clear that the investigation concerns "certain flash memory chips and products containing the same" that infringe one or more claims of the asserted patents. (73 *Fed. Reg.* 77060 (December 18, 2008).) Thus, not only are Respondent Samsung's

flash memory chips accused of infringement in this investigation, but Respondents' products containing said chips are themselves accused of infringement in this investigation. *See Certain Semiconductor Chips with Minimized Chip Package Size & Products Containing Same*, Inv. No. 337-TA-605, Initial Determination (Dec. 1, 2008). Title 19, Section 1337(d)(1) of the United States Code states that "[i]f the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States[.]" 19 USC § 1337 (d)(1) (emphasis added.) Therefore, if the Commission finds a violation of Section 337, any limited exclusion order should reach Respondent Samsung's flash memory chips found to infringe and all of the named Respondents' products containing the infringing chips. *See Certain Semiconductor Chips Having Synchronous Dynamic Random Access Memory Controllers and Products Containing Same*, Inv. 337-TA-661, Comm'n Op. at 12 (U.S.I.T.C. July 26, 2010) (Determining to issue a limited exclusion order, which covered the downstream products of the named respondents, without analysis of the EPROM factors.)

B. General Exclusion Order

A general exclusion order may issue in cases where: a general exclusion from entry of articles is necessary to prevent circumvention of an exclusion order limited to products of named respondents; or there is a widespread pattern of violation of Section 337 and it is difficult to identify the source of infringing products. 19 U.S.C. § 1337(d)(2). The Federal Circuit has emphasized that parties must meet the "heightened requirements of Section 337(d)(2)(A) or

(d)(2)(B)" before a general exclusion order may issue. *Wireless Corp. v. U.S. Int'l Trade Comm'n*, 545 F.3d 1340, 1358 (Fed. Cir. 2008).

Spansion asserts in one conclusory sentence in its post-hearing brief that the Commission should issue a general exclusion order excluding memory cards of all varieties, USB drives, SSDs and computers with SSDs, cameras, camcorders, and MP3 players, because "[t]he evidence demonstrates that a general exclusion order is necessary to prevent circumvention of an exclusion order limited to products of named respondents and that there is a pattern of violation and it is difficult to identify the source of the infringing products." (CIB at 119.) Spansion then impermissibly cites to its pre-hearing brief in support. (*See id.* at 119 n. 82.)

The undersigned finds Spansion's conclusory argument insufficient to meet its heightened burden of showing it is entitled to a general exclusion order.

C. Cease and Desist Order

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order as a remedy for violation of section 337. (*See* 19 U.S.C. § 1337(f)(1).) The Commission generally issues a cease and desist order directed to a domestic respondent when there is a "commercially significant" amount of infringing, imported product in the United States that could be sold so as to undercut the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC Pub. 2391, Comm'n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof and Products Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334, Comm'n Op. at 26-28 (Aug. 27, 1997). The complainant

bears the burden of proving that a respondent has a commercially significant inventory in the United States. *Certain Integrated Repeaters, Switches, Transceivers & Products Containing Same*, Inv. No. 337-TA-435, Comm'n Op., 2002 WL 31359028 (Aug. 16, 2002).

The evidence has shown that certain Respondents maintain commercially significant inventories of infringing articles within the United States. (CX-2892C (Stern, Wit. Stat.) at Q&A 424.) With respect to the Respondent Samsung, various spreadsheets, correspondence, and deposition testimony detail the existence of commercially significant inventories. (CX-548C; CX-398C; CX-401C; CX-934C; CX-935C; CX-936C; CX-937C; CX-952C; CX-953C; CX-954C; CX-955C.) Deposition testimony from Samsung Telecommunications America indicates that Samsung "maintain[s] warehouse [sic] in the United States in Chicago, Illinois and Flower Mound, Texas [ ] (CX-46C (Atwood, Dep.) at 24-26.) Mr. Atwood also stated that [ ] on Samsung's behalf, [ ] (*Id.* at 26-30.) When asked if phones that [ ] Mr. Atwood answered [ ] (*Id.* at 28-29.)

Similarly, Mr. Berndt stated in his December 22, 2009 deposition that Samsung [ ] (CX-52C (Berndt, Dep.) at 78-79.) In addition, during his deposition, Mr. Hyunchul Kwon indicated that Samsung maintained [ ] in inventory

within the United States of various infringing imported articles, including Blu-ray players, LCD TVs, plasma TVs, and phones. (CX-355C (Kwon, Dep.) at 109-117; CX-860C; CX-356C (Kwon, Dep.) at 155-160, 210-212; CX-863C; CX-864C; CX-869.)

Apple provided several inventory spreadsheets detailing the existence of commercially significant inventories within the United States. (*See* CX-997C - CX-1002C; CX-1884C; CX-1885C; CX-1886C; CX-1887C; 1888C; CX-2076C.) In particular, [

] (CX-1885C at APPLE-ITCSP-002313-023236.)

The deposition testimony of Apple representative Tony Blevins further corroborates the fact that Apple maintains commercially significant inventories within the United States. (CX-538C (Blevins, Dep.) at 324-343.)

With respect to the Asus Respondents, Asus maintains commercially significant inventories within the United States for a wide variety of infringing articles. In particular, Asus maintains an inventory of [ ] units of infringing imported products in the United States. (*See* CX-60C; CX-200C-CX205C; CX-209C-CX-217C; CX-219C; CX-1530C.) During his deposition, Asus representative Godwin Yan further confirmed that Asus maintains inventories within the United States. (CX-350C (Yan, Dep.) at 103-104, 165.)

The record also indicates that Hon Hai maintains commercially significant inventories within the United States. For example, in his deposition testimony, Hon Hai representative Eddie Liu indicated that Hon Hai maintained inventories for infringing imported products at a warehouse facility in Dallas, Texas. (CX-60C (Liu, Dep.) at 122-124, 178-194.) Mr. Liu

indicated that Hon Hai [ ] to the infringing products within its U.S. inventories. (CX-60C (Liu, Dep.) at 122-124, 178-194.) Hon Hai also provided an inventory spreadsheet detailing the volume of U.S. inventories of infringing articles, which shows that Hon Hai maintains [ ] units of infringing imported articles within inventory. (CX-1892C.)

The Kingston Respondents also maintain commercially significant inventories of infringing imports products within the United States. (CX-169C; CX-170C; CX-174C.) Indeed, CX-169C and CX-170C indicate that Kingston's inventories of infringing imported articles within the United States exceed [ ] (CX-169C; CX-170C.) As discussed during the deposition testimony of Hank Hsu, Kingston maintains these inventories at Kingston's warehouse facilities in Fountain Valley and Miami. (CX-354C (Hsu, Dep.) at 65-70, 88-91.)

With respect to PNY, various documents provided during the course of discovery evidence commercially significant inventories of infringing imported products within the United States. (CX-731C; CX-734C.) In particular, CX-764C indicates that PNY maintained over [ ] [ ] in inventory of infringing imported products within the United States. (CX-764C.) In addition, during his deposition, PNY representative Robert Stone indicated that PNY maintained a [ ] warehouse in New Jersey dedicated, in part, to inventories of flash memory products. (CX-524C (Stone, Dep.) at 253-258; CX-525C (Stone, Dep.) at 422-442.)

RIM also [

] In their April 5, 2010 Supplemental Response to Interrogatory No. 9, the RIM Respondents indicated that, [ ]

[ ] (CX-3604C; CX-517C; CX-518C; CX-522C; CX-2648C.)

Lenovo and Verbatim also provided spreadsheets evidencing commercially significant inventories of infringing imported products within the United States. (CX-1880C; CX-1881C; CX-1895C; CX-2888C.) With respect to Lenovo, inventory records and the deposition testimony of Edward Brady indicate that company maintains, [ ] an inventory of approximately [ ] within the United States. (CX-59C (Brady, Dep.) at 222-236; CX-642C; CX-1881.)

The record further indicates that a cease and desist order should issue against Sony Ericsson. As set forth in CX-1893C and CX-1894C, Sony Ericsson maintains commercially significant inventories of infringing imported products within the United States. (CX-1893C; CX-1894C.) Indeed, CX-1893C indicates that as of January 2010, Sony Ericsson maintained an inventory of [ ] of infringing imported products. (*See* CX-1893C; *see also* CX-426C (Cromie, Dep.) at 187-198; CX-245C.)

The Sony Respondents also provided evidence of commercially significant inventories. (CX-904C; CX-905C.) In particular, CX-1890C indicates that Sony maintains inventories in excess of [ ] units. (CX-1890C.)

As of November 2009, Transcend maintained inventories in excess of [ ] units. (*See* CX-627C (Tsai, Dep.) at 90-91; CX-431C; CX-464C.)

Accordingly, the undersigned recommends a cease and desist order issue in this investigation as indicated above.

D. Bond During Presidential Review Period

The administrative law judge and the Commission must determine the amount of bond to be required of a respondent, pursuant to section 337(j)(3), during the 60-day Presidential review period following the issuance of permanent relief, in the event that the Commission determines to order a remedy. The purpose of the bond is to protect the complainant from any injury. (19 CFR §§ 210.42(a)(1)(ii), 210.50(a)(3).) The complainant has the burden of supporting any bond amount it proposes. *Certain Rubber Antidegradants, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-533, Comm'n Op., 2006 ITC LEXIS 591 (Jul. 21, 2006). When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product. *See Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. a 24 (1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a reasonable royalty rate could be ascertained. *See, e.g., Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41 (1995).

The Commission has set a bond of 100% when the evidence supported a finding that it would be difficult or impossible to calculate a bond based on price differentials. *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, Comm'n Op., 1996 WL 1056209 (Sept. 23, 1996) (finding that a bond of 100% was appropriate "because of the difficulty in quantifying the cost advantages of respondents' imported Enercon E-40 wind

turbines and because of price fluctuations due to exchange rates and market conditions."); *Certain Systems For Detecting and Removing Viruses or Worms, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-510, Comm'n Op., 2007 WL 4473083 (Aug. 2007) (imposing a bond of 100% based on a finding that the parties had numerous models and products lines, and that a price comparison would be difficult because respondent's products were a combination of hardware and software while the complainant's products were software only); *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (a 100% bond imposed when price comparison was not practical because the parties sold products at different levels of commerce, and the proposed royalty rate appeared to be de minimis and without adequate support in the record).

Since Spansion [

]

Spansion [

] As the [

] Accordingly, should the Commission impose a bond, the undersigned recommends that the bond rate should be set at [ ]% of the value of the infringing downstream product.

Within seven days of the date of this document, each party shall submit to the office of the Administrative Law Judge a statement as to whether or not it seeks to have any portion of this document deleted from the public version. The parties' submissions must be made by hard copy by the aforementioned date.

Any party seeking to have any portion of this document deleted from the public version thereof must submit to this office a copy of this document with red brackets indicating any portion asserted to contain confidential business information. The parties' submission concerning the public version of this document need not be filed with the Commission Secretary.

SO ORDERED.

Charles E. Bullock
Administrative Law Judge

IN THE MATTER OF CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING SAME **337-TA-664**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **ORDER NO. INITIAL DETERMINATION** has been served upon, **Bryan F. Moore, Esq.**, Commission Investigative Attorney, and the following parties via first class mail and air mail where necessary on November 5, **2010.**

Marilyn R. Abbott

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
500 E Street, S.W., Room 112A
Washington, DC 20436

FOR COMPLAINANT SPANSION, INC. & SPANSION LLP:

Gilbert Kaplan, Esq.
KING & SPAULDING LLP
1700 Pennsylvania Avenue, N.W.
Washington, DC 20006

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class Mail
( )Other:_____

FOR RESPONDENTS SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG INTERNATIONAL INC., SAMSUNG SEMICONDUCTOR, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, SHANGHAI LENOVO ELECTRONIC CO. LTD., ASUSTEK COMPUTER INC., ASUS COMPUTER INTERNATIONAL INC., APPLE, INC., TRANSCEND INFORMATION INC., TRANSCEND INFORMATION, INC. (US), TRANSCEND INFORMATION INC. (SHANGHAI FACTORY), KINGSTON TECHNOLOGY COMPANY, INC., KINGSTON TECHNOLOGY (SHANGHAI) CO. LTD, KINGSTON TECHNOLOGY FAR EAST CO., KINGSTON TECHNOLOGY FAR EAST (MALAYSIA), PNY TECHNOLOGIES, INC., SONY CORPORATION , SONY CORPORATION OF AMERICA, SONY ERICSSON MOBILE COMMUNICATIONS AB NYA VATTENTORNET, SONY ERICSSON MOBILE COMMUNICATIONS (USA), INC., BEIJING SE PUTIAN MOBILE COMMUNICATIONS CO., VERBATIM AMERICAS LLC, VERBATIM CORPORATION & HON HAI PRECISION INDUSTRY CO. LTD

Sean Trainor, Esq.
KIRKLAND & ELLIS LLP
655 Fifteenth Street, N.W.
Washington, DC 20005

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class Mail
( )Other:_____

IN THE MATTER OF CERTAIN FLASH MEMORY CHIPS AND PRODUCTS CONTAINING SAME **337-TA-664**

FOR RESPONDENTS RESEARCH IN MOTION LTD. & RESEARCH IN MOTION CORPORATION

V. James Adduci, Esq.
ADDUCI MASTRIANI & SCHAUMBERG LLP
1200 Seventeenth Street, N.W., Fifth Floor
Washington, DC 20036

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class Mail
( )Other:_____

FOR RESPONDENTS SONY CORPORATION & SONY CORPORATION OF AMERICA

John M. Caracappa, Esq.
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue, N.W.
Washington, DC 20036

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class Mail
( )Other:_____

PUBLIC MAILING LIST

Heather Hall
LEXIS - NEXIS
9443 Springboro Pike
Miamisburg, OH 45342

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class Mail
( )Other:_____

Kenneth Clair
THOMSON WEST
1100 – 13th Street NW
Suite 200
Washington, DC 20005

( )Via Hand Delivery
( )Via Overnight Mail
(X)Via First Class M ail
( )Other:_____